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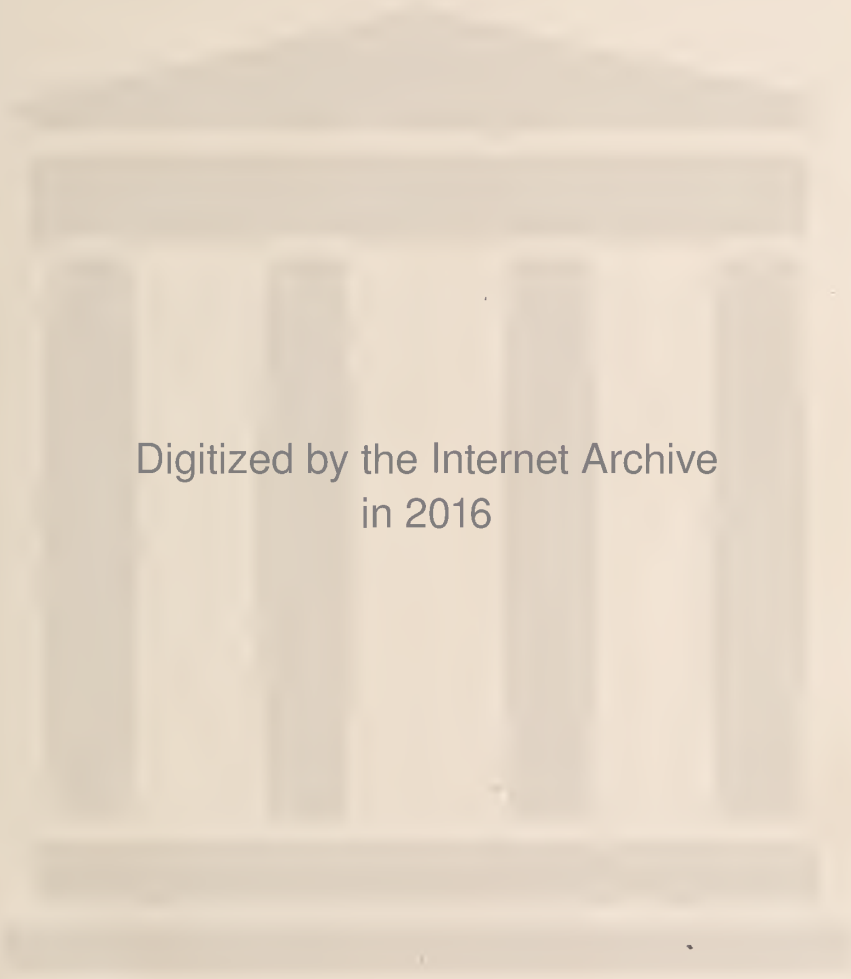
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# Southwestern Medicine

VOL. I.

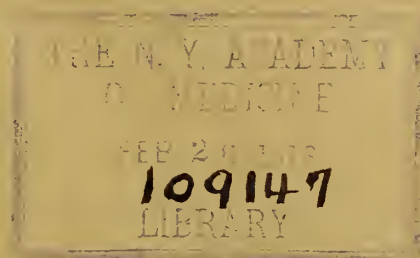
Las Cruces, New Mexico, January, 1917.

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# Southwestern Medicine

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Vol. I.

Las Cruces, New Mexico, January, 1917.

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## SOUTHWESTERN MEDICINE

For several years it has been the desire of those most interested in medical journalism in the Southwest to see a combination of the medical journals published in this territory and a concentration of effort in one common journal. SOUTHWESTERN MEDICINE is the result of the efforts of those who have been working to this end and combines the New Mexico Medical Journal, The Arizona Medical Journal and the Bulletin of the El Paso County, Texas, Medical Society.

SOUTHWESTERN MEDICINE stands for ethical medicine and its advertising pages are open only to such preparations as conform to the rules of the Council on Pharmacy and Chemistry of the American Medical Association.

The Board of Managers is composed of Doctors Roy Thomas and D. F. Harbridge of Phoenix, Arizona, on the part of the Arizona State Medical Society; Doctors Troy C. Sexton of Las Cruces, New Mexico, and George S. McLandress of Albuquerque, New Mexico, on the part of the New Mexico State Medical Society, and Doctors James Vance and F. P. Miller of El Paso, Texas, on the part of the El Paso County, Texas, Medical Society. Doctor James Vance is chairman of the Board of Managers and Doctor Troy C. Sexton is secretary. Doctor R. E. McBride of Las Cruces, New Mexico, has been made the editor-in-chief, while Doctor P. Werley of El Paso, Texas, and Doctor W. W. Watkins of Phoenix, Arizona, are associate editors together with an associate editor from New Mexico Medical Society yet to be named. Doctor B. E. Galloway of El Paso, Texas, has been appointed business manager.

Combining, as it does, the official organs of two state and one county medical societies SOUTHWESTERN MEDICINE is really not a new publication and its aim shall be to carry out the ideas and intentions of the founders of the journals which it combines and to this end it bespeaks the active interest and co-operation of each physician in the territory it represents. Working all together for one common cause the journal cannot be otherwise than a success and fully representative of all that is best in SOUTHWESTERN MEDICINE. With this spirit those in charge hasten to the work and while they are fully conscious of the efforts of others along like lines and in a similar direction they feel that as the chosen servants of the societies represented, they are entitled to seek and to expect the loyal support of the profession of this great SOUTHWEST.

## ALKALINIZATION—ITS USES AND INDEX.

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BY DR. H. A. MILLER  
SURGEON IN CHARGE A. T. & S. F. HOSPITAL  
CLOVIS, NEW MEXICO

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The life of the cell is but an epitome of the life of the individual possessing the fundamental properties of living matter. In unicellular organisms the manifestations of these properties are simple.

As the organism becomes multicellular the life processes become more complex and like society we have specialization of labor on one hand and of functions on the other.

These cells which become specialized for function become grouped and held together by connective tissue stroma and surrounded by a capsule of more or less density, constituting an organ. Therefore a survey of the individual cell action is essential to an understanding of the life process of the whole organism.

Some six years ago I became interested in an article in the A. M. Journal, in regard to the acidity of the urine.

Using the N-10 Sodium Hydrate Solution, we began titration of all the urine that was examined. In acute infections, viz: typhoid fever, pneumonia and appendicitis we found an increased acidity of the urine. Especially is this true when albuminuria is present with these infections.

The idea occurred to us that therefore the urine to be of chemical value, must represent, at least, the relative acidity of the organism, or a loss of the alkaline reserve in these conditions. Accepting that the figure between twenty (20) and forty (40) represented a practically normal acid urine, we found at times a wide variation.

We deal only with the clinical side of the question and as we do not consider ourselves competent to enter into the theory of the mechanism, I give you a brief synopsis of Dr. Fisher's work, which he brought out several years ago.

"Any colloid placed in an acid-medium will swell because of the water of absorption. The amount or degree of swelling depends upon the nature of the acid.

"In the living body these effects are produced by the weak organic acids developed during metabolism under circumstances that favor the production of acids in the tissues; or associated with a perverted gastrointestinal tract, there will be produced a general or local edema. This edema may be relative or scarcely show to a slight puffiness, or an immense edema of the whole body.

"Necessarily this swelling results in diminution of cell functions. In the kidney which is surrounded by a comparatively dense connective tissue capsule, which is non-elastic, the swelling or edema of the individual cells may produce destruction of a portion of these cells. Such a condition, essentially an acute nephritis may occur or follow any acute infection.

On the other hand the general acidity of the organism, or the loss of the alkaline reserve may be so slight that no gross physical result may be present, but the cells be inhibited in metabolic activity, the same being evidenced by discomfort, myalgic aches, pains, etc.

"In our work, therefore, we use the urine to determine the relative acidity of the organism. We determine the same by titrating the urine with N-10 Sodium Hydrate Solution; using phenophthalein as an indicator, and check the acidity with the indican content. Thereby determining whether a high acidity is of tissue or of fermentative intestinal origin. The former we term of endogenous and the latter of exogenous origin."

Dr. Fisher has also shown a swollen colloid in an acid media will give up its water when placed in an alkaline media. That, with a neutralization of the acid there will be a release of water from the swollen colloid.

We therefore find the acidity of the urine an index to treatment. In minor cases in which the individual gives no physical findings, only states that he feels bad, is disinclined to exertion, etc., we often find a high acidity of the urine. Alkalinization clears them up quickly. In others with high indican content a cleansing of the intestinal tract with cutting down of protein intake and alkalinization relieves.

In acute infectious diseases as pneumonia, scarlet fever, etc., when the urine is highly acid, we find alkalinization of use. In fact, in pneumonia, uncomplicated, practically the only treatment we use is morphine to control pain to secure deep breathing and alkalinization. If the same is used early in treatment it prevents complications and hastens crisis.

Pre-operative and post-operative cases however have really in our mind demonstrated the principle of alkalinization most brilliantly. The use of Sodium Carbonate and Salt Solution, with opium or morphine prepares the patient before operation by raising the alkaline reserve.

After operative procedure with anaesthesia, we always have a relative acidosis and the use of alkalizing measures calms the patient prevents exhaustion and promotes a sense of well being. The use of Fisher's Solution, by the drop method also greatly stimulates peristalsis and prevents gas distension. We therefore contend that an acidosis is present in many conditions and its diagnosis upon finding the presence of beta-oxubutyric acid and the acetone bodies in the urine may be likened to making a diagnosis of tuberculosis only after find-



ing the tubercular-bacilli in the sputum, or in a terminal condition. In connection with this I beg to read a small clipping from the Medical Sentinel:

**ACIDOSIS.**—Medical Sentinel says: With our growing knowledge of the conditions known under the name acidosis, we are gradually getting a clearer insight into and better understanding of many difficult problems in internal medicine, and are able to better appreciate many conditions that were formerly obscure and unexplainable.

While the knowledge that acidosis occurs as a symptom in the terminal phase of diabetes was possessed by many of us we were unaware that it is a condition that may and often does occur in cases suffering from diseases accompanied by persistent vomiting, where there has been a persistent diarrhea or starvation or in patients who have been upon a starch-free diet for any length of time. Other conditions that are mentioned as factors in the production of this condition are chronic inflamed tonsils, fat indigestion, kidney diseases as well as in diabetes.

Acidosis occurs in these conditions as a result of the lowering of the normal alkalinity of the blood and the system becomes overwhelmed with an acid-intoxication. This may be so severe as to result in coma and death. This acid-poison is beta-oxybutyric acid and is formed as a by-product in the digestion of fats. Normally this acid is quickly oxidized and eliminated. In acidosis, however, this oxydization fails and beta-oxybutyric acid and its derivatives acetone and diacetic acid saturate the tissues and fluids of the body, where it can be found in large amounts in the blood and urine.

Inasmuch as it is claimed that this failure of oxidization is due to a lack of carbohydrate elements in the food ingested it is urged that after persistent post-operative vomiting, starch in a form easily assimilated be given in plentiful quantities. It is recommended also that in such prolonged and wasting diseases as septicemia, typhoid and pneumonia starch should form an important article of diet.

In children, acidosis is not an uncommon condition and the possibility of its occurrence should be constantly borne in mind. The symptoms are usually loss of appetite, nausea, vomiting, coated tongue, thirst, prostration, diarrhea. In a small percentage of cases restlessness, dizziness and cerebral symptoms may be present. There is a moderate degree of fever with a proportionately rapid pulse. There is frequently a dyspnea. In practically every case acetone can be found in the urine; at times, however, the urinary secretion is so scanty that but little acetone may be excreted.

The treatment is simple and consists of combating the acid condition by the administration of alkalies; sodium bicarbonate being the most efficient. The dose must be large so as to combat the acids, with as little delay as possible, its size and frequency depending on the severity of the case. Sixty grains every two hours is recommended by



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Metcalf in treating the condition in children. A close watch must be kept on the urine as to the indications for increasing or decreasing the dosage.

We therefore recommend the titration of urine as a guide to treatment, providing the proper interpretation of findings be made.

In conclusion will say that Sodium Bicarbonate will not reduce the acidity of the urine, but that Sodium Carbonate, citrate, acetate will, as will also the similar potassium salts.

We would caution, however, against the use of the citrates when there is a tendency to bleed and also in typhoid fever.

## ROENTGENOLOGY IN THE DIAGNOSIS OF CHEST DISEASES\*

(With Special Reference to Pulmonary Tuberculosis)

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BY DR. W. WARNER WATKINS,  
PHOENIX, ARIZONA.

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During three years spent as director of a tuberculosis sanatorium, the importance of raying the lung for diagnosis, and for following the processes of healing, became so apparent, that it was made a regular part of the routine examination. After four further years of experience and after study of about one thousand roentgenograms of lung tuberculosis, the procedure, from being important, has become a necessity. There is no intention, in this statement, to discredit the opinions of eminent men who do not agree to this necessity. Men whose ears are keen enough and fingers sensitive enough to go over a chest and visualize the location and extent of the disease processes within, may not need this aid; but it would certainly be better if these specially skillful men did not disparage the X-ray and thus discourage the ordinary clinician from seeking a valuable adjunct to his ears and fingers, in diagnosing pulmonary disease. Why are not three senses better than two?

The roentgenogram bears the same relation to the diagnostic scheme of pulmonary tuberculosis as it bears to other conditions where the method has proven of sterling value. The very nature of the roentgenographic negative prevents its being used, alone, as the basis for a diagnosis; it simply shows variations in density, presenting shadows opposite those tissues which are denser than the surrounding area. To interpret these shadows, exact anatomical knowledge, as well as all the clinical data obtainable, is required, before an interpretation can intelligently be made. Naturally, then, the roentgenogram is supplementary to the physical examination. The fact that it will reveal pathological changes not detectable to the senses of touch or hearing does not relieve it of its subsidiary position in the diagnostic scheme, for the physical examination will, likewise, give evidence which cannot be brought to light by any roentgenogram of the lung.

A word or two about the principles of chest roentgenography. These are well known to the specialist, but are not always appreciated by the general practitioner. The best roentgenograms are usually disappointing to the man not accustomed to interpret them; this is especially true of joint and chest negatives. The principles summarized by Case, with regard to joints, apply, with equal force, to lung

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\*Read at 24th Annual Meeting of the Arizona Medical Association (Tuberculosis Section) June 16, 1915.

exposures. In substance, these principles are based on the necessity of securing, on the same negative, shadows of tissues which vary widely and of tissues which vary little, in penetrability. The resulting negative is a flat grey, entirely lacking the photographic ideal of black and white. Caring nothing for ribs and vertebrae, in the ideal lung negative, they hardly show. Such a roentgenogram is made with a tube high in vacuum, using exposure sufficient to penetrate, but not sufficient to blacken the interspaces of a normal chest. In such a negative, the finest ramifications of the bronchi can be seen, while fibrous tissue, calcified and congested glands stand out as more or less dense white masses. The spine should not be visible through the heart shadow.

While a roentgenogram is interesting and instructive in all cases, in some it is nearly indispensable, if we desire to eliminate conjecture.

*First.* In the very early stage. Any man with experience in tuberculosis can recall cases where, after the most careful physical examination, he was still uncertain whether there was a lung lesion, although history and general symptoms suggested it. With the physical chest findings showing no greater variation on the two sides than is frequently found in health, he cannot confirm his suspicions by physical methods, nor can he rule them out. Patients with the indefinite symptoms of a constitutional ailment, with or without persistent afternoon temperature, with a high lymphocyte count, with a positive tuberculin reaction, present a symptom-complex which is a clear indication for a roentgenogram of the lung. These patients, if tuberculous, will show glandular masses around the lung hilus, with beginning fan-like radiations of interweaving lines, upward and outward toward the apex.

We do not take many roentgenograms before we find that practically every adult will show hylic shadows of greater or less extent, and the extent of these do not seem to bear any relation to the condition of health; this naturally raises the question of the value of such evidence, if it cannot distinguish the healthy from the diseased. The answer to this lies in two facts; first, roentgenology has emphasized that there are no normal lungs in the populated communities of civilized lands; second, the roentgenogram gives no final answer, in itself, to the question as to whether disease is present or not. It simply shows the shadow of a place from which disease *might* spring, visualizing a fact we are prone to forget, which is that tuberculosis is always well implanted before we discover it. No physician can say to a patient that his disease began in such a month or such a year. If roentgenography cannot say that a chest is normal or diseased, neither can the most skillful physical examiner mark the borderline between health and the beginning of tuberculosis in a lung. The difference between a "normal" lung and a tuberculous lung is not a difference between non-infection and infection, but between successful resistance

and invasion beyond the first line of defence. At the moment of invasion beyond the hilus of the lung, the roentgenographic shadows are practically the same in the so-called normal and in the incipient tuberculous lung. The appearance of objective or subjective symptoms simply means that the line of defense which holds firm in people who do not develop tuberculosis, has been broken through in those who do develop the disease, and this break in the line of defense can be shown *in the roentgenogram an appreciable time before it produces palpable physical signs.* And, at the time of the appearance of the initial physical signs, the roentgenogram will show us where the sortie into virgin territory, for where the organisms have massed in greatest num-



Figure 1. A supposedly normal lung with early infection. Patient is a young, healthy, married man. Was among a dozen chosen to furnish roentgenograms of healthy lungs. The negative shows some suspicious shadows off the right hilus. The following interesting history was elicited; two years ago while on an auto trip, he exerted himself violently shoving the machine out of sand; two weeks later he developed a pleural pain which persisted for two weeks beneath the right clavicle, at which time the von Pirquet test was positive. This passed away and he has had no more trouble, but this was undoubtedly an incipient tuberculosis.

bers and where the defense has been the fiercest, there we will find dense fibrous shadows and, beyond these, the interweaving shadows of the encroaching infection and its tissue changes. (Fig. 1.)

*Second.* In those cases where we have activity, plainly evident on physical examination, bacilli in sputum, etc. In many of such cases it is next to impossible to say from what particular foci the activity has spread, when physical examination alone is depended on. In pulmonary tuberculosis, it is just as necessary to know where the



primary feeder is as to know whether a general peritonitis has resulted from the appendix, a ruptured pus tube or a perforated gut. In fact, except in the last named emergency, it is more essential, because after a peritonitis has developed from a ruptured abscess, the location of the original focus becomes a minor matter, while the location of the primary focus in pulmonary tuberculosis is always a matter of major importance. It has assumed enormous importance in those cases where artificial pneumothorax is to be considered. If the original focus has been on one side, has healed, and infection has crossed to the opposite side, the compression of the side now active, is a serious matter. Such a condition is frequent enough to make a roentgenogram imperative in every patient before pneumothorax is attempted.

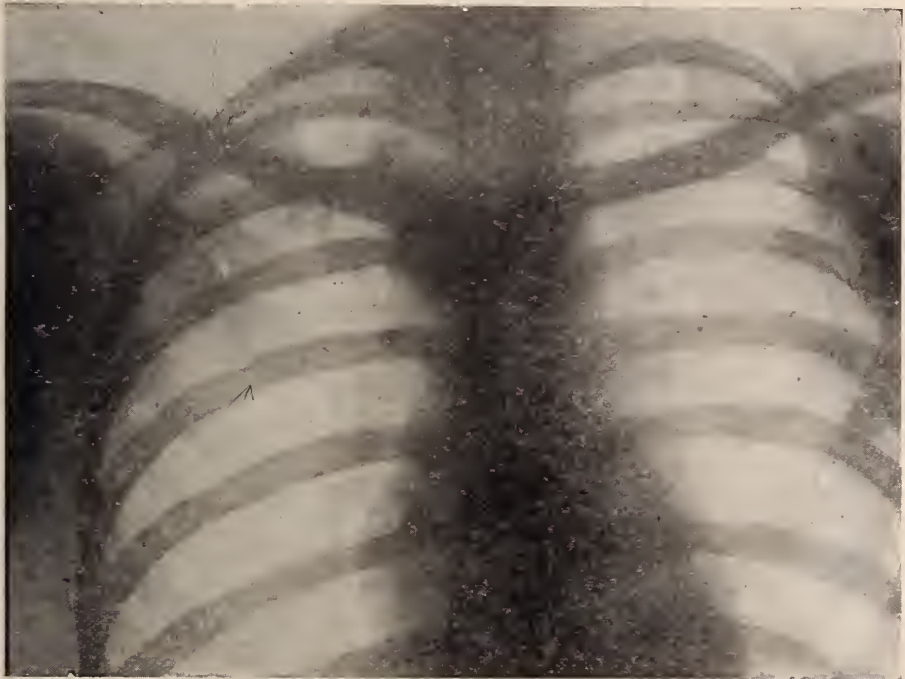


Figure 2. In this case the invasion was insidious without appreciable inroads on the general health; there were tubercle bacilli in the sputum, but it was difficult to convince either patient or physician of the gravity of the condition. The X-ray shows that the activity extends more rapidly than the fibrosis, so that the patient is not holding his own regardless of what the physical findings or general health may have to say.

*Third.* When we wish to determine the extent of old involvement. The patient with evident chest disease, physical signs abundant, still present the open question as to whether the condition of activity is of recent development, or whether there has been extensive fibrosis with a recent exacerbation. When the chest is filled with abnormal signs the physical examination will not always answer this question satisfactorily. Percussion, auscultation and palpation, in a patient with good nourishment, indefinite history, but presenting active tuberculosis, will frequently fail to show the extent of past ravages.

The shadows of fibrosis following the bronchi, of hardened glands, nodules of scar tissue, or the more delicate shadows of congestion areas or new-forming tubercles, will give information which, to say the least, is of valuable confirmatory value. (Fig. 2.)

*Fourth.* When we wish to check on the processes of healing, by observing the spread of fibrosis. A roentgenogram lends a confidence which no other observation will give, by seeing the areas of feathery or blurred shadows, which mean recent trouble, change to hard, impenetrable nodules, or clean-cut running lines of fibrosis or cicatrization.

*Fifth.* To supplement physical findings and general symptoms, or to warn us of danger in children. It has been a matter of astonishment to those men who are working on the subject and to those fol-



Figure 3. Ten months old baby. Began to lose flesh. Parents wished roentgenogram for suspected pin in bowel, swallowed a month previous. No pin was found, but the chest findings were sufficient to explain loss of weight. Tuberculosis was suggested to the patient's physician who advises that this was confirmed by subsequent course of the disease, the baby eventually dying of tuberculous meningitis.

lowing their work, now an old story, to learn of the large proportion of children who are tuberculous. To such, the statement that tuberculosis claims a larger number of victims in the first years of life than in any later period, is not a surprise. It is becoming more and more evident that the first ten years of life are equally as dangerous for tuberculous infection as the third decade. Whether or not adult tuberculosis is always the result of childhood infection is not a settled question, but we do know that far more children than we have ever suspected die or have their physical vigor seriously impaired by pulmonary tuberculosis. In working out these conclusions, roentgenography has played an important role and is destined to play a greater. The physical examination of children offers more difficulty than that of

adults, and all the advantages of a roentgenogram in the adult are applicable, with added emphasis, to children. (Fig. 3.)

*Sixth.* Mention has been made of the importance of the roentgenogram before artificial pneumothorax. It will, also, be found of great assistance, in fact almost essential, following the first injection, in locating adhesions. Also exposures from time to time during the treatment are advisable to ascertain the effect of the gas pressure on the mediastinum and the development of fluid in the pleural cavity.

*Seventh.* The diagnosis between tuberculosis and mediastinal



Figure 4. Patient complained of "asthma"; was examined for tuberculosis (physical examination and repeated sputum examinations), was treated with vaccines under a diagnosis of chronic bronchitis. Finally X-ray of the chest showed an aortic aneurism, probably syphilitic.

tumors or aortic aneurism frequently offers difficulty. The physical signs may be similar, the subjective sensations the same, and the resemblance between cancer cachexia and the anemia of tuberculosis marked. (Fig. 4.)

*Eighth.* The use of the roentgenogram in the diagnosis of heart disease and of aortic disease is a field which is being rapidly developed, and which cannot be touched on in this paper. Sufficient to

say that the exact size of the heart, and the shape of the organ can be determined by the roentgenologist with an exactness which no clinician can approach. Also the type of abnormal heart (syphilitic, rheumatic, or arteriosclerotic) has a characteristic shadow.

Nothing has been said about stereo-roentgenography because this is purely a technical matter, but this method is used in all chest roentgenograms.



## THE DIAGNOSIS OF GASTRO-INTESTINAL LESIONS BY MEANS OF THE ROENTGEN RAY\*

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DR. WILLIAM B. BOWMAN,  
LOS ANGELES, CALIF.

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To Cannon of Boston should be ascribed the credit of the fundamentals of the examination of the gastro-intestinal tract by means of the Roentgen Ray and the opaque meal.

Most of his experimental work, however, was done on dogs and cats and it was left to Rieder of Munich to demonstrate conclusively that bismuth in large doses was well tolerated by human subjects and to use this fact in the diagnosis of lesions of the gastro-intestinal tract by means of the X-ray.

It is only within the last few years, since the introduction of intensifying screens and interrupterless transformers which made possible instantaneous radiography, that the real value of the roentgen ray has been demonstrated in this class of cases.

The efficiency of this method of diagnosis, however, does not depend so much upon the apparatus used as it does upon the skill and experience of the roentgenologist in the interpretation of his findings and it is very essential that he be entirely familiar with the normal shadows and their many variations in perfectly normal individuals before attempting a roentgenological diagnosis in a pathological case.

The clinical diagnosis of gastro-intestinal lesions is, as you all know, a most difficult task and any method which will aid in the diagnosis of these cases should be welcomed by all, however, too much should not be expected from it alone and, as in all branches of medicine, its greatest value is when used in conjunction with the clinical symptoms and laboratory findings.

There are classes of cases in which the roentgenological diagnosis is positive and easy and the clinical symptoms vague and indefinite; there is also another class of cases in which the clinical symptoms are fairly positive and the X-ray findings vague and indefinite and there is still another class of cases in which neither the clinical symptoms, X-ray or laboratory findings are sufficient in themselves, still a correlation of the same by the physician will enable him to make an accurate diagnosis. Therefore, I want to emphasize the fact that while we do not expect the X-ray to displace the clinical method of diagnosis,

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\*Read at the 25th Annual Meeting of the Arizona Medical Society, Phoenix, Arizona, April 27, 1916.

still the time is not far distant when the X-ray examination will be as essential an aid in the routine examination of these cases as is the Wassermann examination in syphilis.

Briefly, there are three methods of examination of patients, first the screen or fluoroscopic method which is used mostly in Europe and which consists in the examination of the patient by means of the fluorescent screen, without the use of X-ray plates and which is a cheap but incomplete method. Second, the serial method, so named by Cole of New York and which consists of the taking of many plates of the gastro-intestinal tract at various intervals. This method is also incomplete and very expensive. The third and last, the combined method is the most accurate and universally used method. It consists first in the examination of the patient by means of a fluoroscope, followed by the making of plates where necessary to obtain more detail and when a permanent record is desired.

As to the drugs used, the subcarbonate of bismuth is perhaps the one most universally used, but on account of its depressive action on peristalsis, is not quite so efficacious as is the oxychloride which is easier held in suspension and has no effect on peristalsis.

Barium sulphate (C. P.) is often used, principally in cases in which expense is an item. However, it is coarser and more gritty, and one must be familiar with its action upon peristalsis so as not to be misled in the interpretation of the findings, as the time of passage through the gastro-intestinal canal is much less than in the cases in which the bismuth salts are used.

It is better that one thoroughly familiarize himself with one particular technique and stick to it in order to avoid confusion in the interpretation of the shadows. There are many different vehicles employed such as mucilage of acacia, water, condensed milk, the various cereals or breakfast foods and milk or buttermilk. Each of course, is supposed to have its advantages, but I find buttermilk to be as good as any as it is very easily handled and it is seldom that a patient cannot drink it.

Two ounces of bismuth oxychloride is suspended in one pint of buttermilk. This is given the patient at the time of the first examination. If, however, it is found necessary to economize on time, the so-called double meal may be given, which consists of one given at home six hours before and one at the office at the time of the examination.

For study of the colon, an enema composed of from four to six ounces of barium sulphate, twelve to fourteen ounces of fuller's earth and from two to three pints of tepid water; or six ounces of barium sulphate, three pints of condensed milk, a pint of acacia, given as a low enema, will gradually fill out the colon and work its way to the caecum and occasionally even through the ileocaecal valve.

Direct inspection of the colon by means of the horizontal fluoroscope, will show any filling defects which could not be readily diagnosed by means of an X-ray plate alone.

*Preparation of the Patient.* The patient is allowed to eat from the evening before to the time of examination. All drugs which may in any way effect the motility of the intestinal canal are discontinued. No cathartics are allowed just prior to the examination, as it is essential to get the patient in as nearly his normal state as possible.

However, it is very essential in the study of the colon by a bismuth enema, that a cathartic should be given and the colon thoroughly cleansed with a soap suds enema before the examination.

The meal is administered on a fasting stomach and the first examination made. No food or water is allowed until after the six hour examination, at which time the normal stomach should be entirely empty. The patient is then allowed to go ahead with his regular diet.

The time required for the passage of the bismuth in the normal person varies considerably with the individual, but the average time is approximately as follows: the stomach empties itself in from four to six hours; the head of the bismuth column reaches the caecum in from four to five hours; in twelve hours, it should all be out of the terminal ileum and in the caecum, ascending and transverse colon; in fifteen to eighteen hours, it should be in the descending colon and in twenty-four to thirty-six hours, in the sigmoid and rectum.

### *Diagnosis of Gastric Ulcer.*

Gastric ulcer is by no means as common a condition as we were originally led to believe. The Roentgen ray has demonstrated many of the so-called gastric ulcers to be in the first portion of the duodenum.

Carmen of the Mayo clinic, who has had a most wonderful opportunity of following his cases to the operating room, says the niche and accessory pocket are the only signs of ulcer upon which he can base a positive diagnosis of same. He divides ulcers into four classes as demonstrated by their surgeons.

- (1) Small erosions of the mucus membrane.
- (2) Penetrating or callous ulcers with deep craters.
- (3) Perforating ulcers.
- (4) Early carcinomatous ulcers.

The first class (the small erosions of the mucous membrane) are the ones most often overlooked by the roentgenologist, but may be suspected when accompanied by an incisura which is an indentation in the gastric outline produced by a reflex spastic contraction of the circular muscle fibres, or when there is a six hour residue present. The other three classes are easily diagnosed unless located on the posterior wall high up in the cardiac end, the penetrating ulcer is

diagnosed by the visualized crater or so called niche and the perforating ulcer usually showing an accessory pocket or a niche such as is seen in a penetrating ulcer.

A persistent hour glass stomach and antiperistalsis are pathognomic of some lesion, but not necessarily ulcer.

Syphilis of the stomach is now supposed by the roentgenologist to be a rather common disease and all cases of penetrating ulcers should have a Wassermann blood examination made and, if positive, anti-syphilitic treatment instituted along with the ulcer treatment.

### *Diagnosis of Duodenal Ulcer*

A positive diagnosis of duodenal ulcer can be made:

(1) If you have a persistent deformity of the duodenal bulb or so called cap.

(2) A duodenal diverticulum which is rather rare.

(3) A marked hyperperistalsis with a six hour residue.

There are many minor signs upon which a diagnosis of duodenal ulcer may be based, but none of which are pathognomic in themselves.

(1) Hyperperistalsis and hypermotility.

(2) Hypertonicity of stomach in non-obstructive ulcer.

(3) Hypotonicity of stomach with resulting dilatation in obstructive cases.

(4) Lagging of bismuth in duodenum.

(5) Spasm of stomach and pyloric sphincter.

(6) Six hour residue.

(7) Transient incisura or hour glass stomach.

All of the above may be found in duodenal ulcer, but are also sometimes of reflex origin from gall bladder disease, appendicitis, renal calculus, hypernephroma, etc.

### *Diagnosis of Gastric Cancer.*

It has been demonstrated in all of the large clinics of the world that a positive diagnosis of gastric carcinoma is possible by means of the X-ray long before a positive clinical diagnosis can be made, therefore in all cases of suspected carcinoma, it should be made a routine procedure.

The principle signs are:

(1) Filling defect in the stomach outline at the site of the tumor.

(2) Thickening of walls resulting in various disturbances in peristalsis.

(3) Rapid emptying of stomach in non-obstructive cases.



(4) Six hour residue if the tumor involves and obstructs the pylorus.

(5) Fixation of stomach if there are perigastric adhesions.

In conclusion I wish to again state, first, that we do not expect the Roentgen ray examination to displace the clinical examination, but that it is a great aid in the diagnosis of gastro-intestinal lesions and should be used as a routine procedure in such examinations.

Second, that the diagnosis of gastric cancer by means of the Roentgen ray can be made long before a positive clinical diagnosis is assured.

Third, that it is of great assistance to the clinician in enabling him to determine whether the case be medical or surgical.

Fourth, and to the surgeon in guiding him to the exact seat of the lesion.

I also wish to warn the roentgenologist that the X-ray findings should be entirely independent of the clinical history.

Carmen in one of his articles states "I have small patience with the clinician who using the X-ray because of its spectacular effect arrives at a diagnosis that is 100 per cent clinical, but gives the Roentgen ray credit, therefore and thus fosters the impression that the Roentgen ray alone will elucidate the most recondite conditions."

It must be borne in mind that at all times the pictures seen both on the fluoroscopic screen and photographic plates are not photographs of the organs themselves, but are only shadows and that the accuracy of the X-ray diagnosis depends upon our ability to interpret these shadows and that many of the errors are due not to the X-ray findings but to our interpretation of the same. Consequently we wish to impress upon the clinicians and surgeons that they should not be antagonistic towards the Roentgen ray diagnosis of gastro-intestinal lesions, but that they should co-operate and work with the roentgenologist in arriving at a correct diagnosis.

## DISCUSSION

**Dr. W. Warner Watkins, Phoenix, Ariz.** In considering a discussion of this paper, I was much relieved to see that Dr. Bowman did not cover the entire field of the abdominal lesions to be examined by the X-ray, otherwise it would be presumptuous in me to attempt to discuss the subject. There are a few points that were purposely avoided by the doctor and these I can, properly, emphasize. Dr. Bowman's paper is from a roentgenologist to general men, physicians and surgeons; I would like to emphasize some of the misconceptions of the general men with regard to the roentgenologist; they put him in much the same position as they put the pathologist, that of a technician whose function it is to perform things to be specified by them. No doctor who tries to use the X-ray man in this manner will ever get any satisfactory work. It is only by using the roentgenologist as a consultant, placing at his command all the facts known about the case and then permitting him to make such examinations with the X-ray as he sees fit, that any satisfactory results will ever be gotten. The most frequent error that I have noticed is for a patient to be sent in for a "stomach examination," with the qualification that no other part of the intestinal tract need be inspected. As a stomach can be examined in one sitting of half an hour and a complete examination requires three or four appointments during two success-



ive days, we cannot often surreptitiously make the complete examination, but I have done it several times. In more than 50% of the cases sent for stomach examination, the lesion is found in the appendix or caecum. So that I wish to emphasize what Dr. Bowman has mentioned, that a complete abdominal examination with barium is indicated, if any X-ray examination at all is indicated.

My second point will illustrate this further; this is in regard to the importance of caecal stasis and incompetency of the ileo-caecal valve. Several first class X-ray men and several first-class clinicians and surgeons have been convinced of the importance of these lesions. Most X-ray men are undecided and it is their function to record these lesions and it is the business of observing clinicians and surgeons to determine their relation to symptoms. It has recently been demonstrated by post-mortem work and experimental work by some man in New York that a Lane band is simply an effort on the part of Nature to brace an incompetent ileo-caecal valve. As you know the movement in the caecum and ascending colon is a to and fro movement; if, in the antiperistaltic wave the valve is not closed there is regurgitation into the terminal ileum; this produces a sagging in the ileum, which is braced by the formation of this accessory band. Whether or not stasis is of great clinical importance, it well illustrates the necessity for thorough examination. Stasis in the caecum, for example may be caused by lesions at least three points widely separated. Duodeno-pyloric obstructions will produce reflex stasis; adhesions at the hepatic flexure will produce mechanical stasis; ileo-caecal incompetency will produce permanent stasis in the caecum and terminal ileum. Personally I consider ileo-caecal incompetency a pathological condition, producing grave symptoms and requiring surgical relief; not all incompetent valves produce symptoms any more than all incompetent heart valves produce them; as long as the ileum and caecum can compensate by extra muscular effort, symptoms will be in abeyance, but when compensation fails and permanent stasis results, symptoms will be present. The presence of this condition can be demonstrated only by the X-ray.

One other condition, the demonstration of which is due entirely to the roentgenologist is that of diverticula of the large bowel and its place in abdominal symptomatology. Case's classical work in this condition is worthy the attention of all medical men.

One other little point and I will stop; if surgeons and physicians would inform themselves and appreciate the difficulties attending the diagnosis of gall-stones, the roentgenologist would be saved a great deal of embarrassment. When you send a patient for gall-stone examination, please remember that you are asking for the most difficult examination possible, and one in which the entire result depends upon the interpretation of very vague shadows, some perhaps which will not be visible to you at all. Sometimes three or four examinations will be required and a sinful waste of plates; have patience and co-operate with us in our difficult work and we will give you good results.

**Dr. R. D. Kennedy, Phoenix, Ariz.** I do not know why I was put on for the discussion of this paper, unless the committee knew I did not know anything about it and would not take much time. I derived a great deal of benefit, inasmuch as it has taught me to lean more on the roentgenologist than I have in the past. I would like to ask one question; in cases of duodenal ulcer with reflex pyloric spasm with retention, if belladonna has any action?

**Dr. S. D. Swope, Deming, N. M.** The paper has given us a clear idea of the present development of roentgenology with reference to the abdominal organs. Several years ago, I recognized the importance of this procedure and, on a visit to the Mayos, went through the procedure and had my own stomach visualized for the purpose of familiarizing myself with the subject. I might relate two cases that will bring out the importance of this procedure. A woman 25 years old, for 20 years or more had suffered from stomach trouble; had been operated upon without definite physical excuse for the disturbance being found; had an X-ray examination with the bismuth meal and stenosis of the pylorus demonstrated. The case was reported to this body two years ago at Tucson. The case was operated, gastro-enterostomy performed and the patient has steadily grown better from that time to this; am pleased to make this further report of that case; recent examination shows our gastro-enterostomy functioning properly. Another case from the East, a woman with bronchial asthma, with a certain amount of stomach disturbance, sufficient to offer an excuse for a Roentgen examination. We demonstrated a large mass encroaching on the lesser curvature which we decided was sarcoma. Case went back

East to an eastern surgeon where it was operated and our diagnosis was confirmed. These two cases illustrate the importance of making routine stomach Roentgen examination of cases coming to us which, clinically are not clear. Would lay emphasis on that and make it more positive by saying that all cases coming to the surgeon for surgical procedure on the alimentary canal should have a Roentgen examination of the stomach with a six hour bismuth meal following the regular procedure, as described by Dr. Bowman.

**Dr. John E. Bacon, Miami, Arizona.** It seems to me that the lesson that Dr. Bowman has given us to carry is the vast importance of these examinations in the early diagnosis in malignant conditions. Some of those slides which he showed us impressed me with the fact that the clinical signs and symptoms of these cases are tinkered with so long that they get to the point where pyloric resection would be impossible, where, at an early stage in the history of that case, it might be done. The other thing is in line with the impressions I had yesterday from Dr. Flinn's paper; that is that the value of these examinations depends absolutely upon the interpretation of these plates and these interpretations can only be made by following an exact technic, and requires a specialist who does practically nothing else. How in the world is the average practitioner going to get his suspected cases to a specialist of that sort when they have not the necessary means to come? We have one of the latest and most improved X-ray outfits which we use largely for fracture work, feeling competent to interpret these; but I declare I would not, under any circumstances, open an abdomen upon a diagnosis resting on my interpretation of an X-ray plate; I would do it on the clinical interpretation but not on that. That leaves us in the position of sending these cases to a specialist; that brings us back to the same question which came to me yesterday; that we must have groups for diagnostic purposes in every center of population large enough to support them. In the Miami district we have about fifteen thousand people; I believe we have an average grade of physicians, but there is not a man in the district who can interpret these plates with a sufficient degree of satisfaction to justify another man operating or not operating according to that interpretation.

**Dr. R. L. Alexander, Tempe, Ariz.** The doctor acknowledges that he sometimes makes mistakes. I would like to ask the doctor what he attributes these mistakes to and if he looks forward to the time when the X-ray specialist will not make mistakes. In other words, are not exploratory operations justified in many cases?

**Dr. W. O. Sweek, Phoenix, Ariz.** This subject of X-ray diagnosis in the intestinal tract is of peculiar interest to me, especially the gastric ulcer end of it. I have had occasion to go into the subject of gastric ulcer rather thoroughly from the standpoint of student and from the standpoint of patient. I consider gastric ulcer a medical proposition from start to finish; that perhaps is a narrow view to take, but gastric ulcer does not become a surgical proposition until late. If we have the advantage of correct X-ray diagnosis, a good history and the other diagnostic points, we can arrive at a diagnosis in gastric ulcer in over 90 per cent of the cases and get at these cases with medical treatment before they become surgical cases. It is a nice thing to open a patient and do a gastro-enterostomy and cure a gastric ulcer (sometimes), but has that patient ever been subjected to medical treatment in the proper and rigid manner that the ulcer calls for, when an early diagnosis is made by the clinician and X-ray man? You will find the treatment demanded post-operative has as much influence on the cure of the condition as the gastro-enterostomy has, and then we have the gastro-enterostomy to contend with. Those who have followed these cases through will readily remember the grief that comes from gastro-enterostomy; a gastro-enterostomy is only smooth sailing at the time of the operation. X-ray diagnosis is especially important because you can detect some forms of ulcer with the X-ray that you cannot detect otherwise. In my own case, I had four or five of the best diagnosticians in this country go over me and a diagnosis was not made until after a severe hemorrhage; then the diagnosis was readily made by my room-mate who was a freshman student.

**Dr. Donald McRae.** One speaker impressed me as perhaps holding the views of a great many of us, who are in communities where we have not the advantages of having these experts. It resolves itself back into the old story that we must do the best we can. I am living too far away from here for any person to take personal offense at what I say, but I would never think of opening a belly or doing a so called exploratory operation without first submitting

my patient to the X-ray. I am in position where I can do that, but at one time I was not in that position. There are men in this community who tell me they are making from fifteen to twenty thousand dollars a year and yet they do not have these things done. No man should take in that amount of money and not provide himself with all these aids; no man can run a business without expending a certain amount of money in that business and do justice to the patient. I made it a point to get one of these men to come and work with me and in a very short time, he was taking care of himself. No man with a gastric symptom or indefinite abdominal symptoms should be taken care of without X-ray, or have treatment done; I differ with the gentleman who said it should be done only before operation. These things should be done the minute they call on the internist; the physician is the man who must see these cases early. The doctor in the country or similar community who sees these cases must either send the man immediately to the expert or equip himself so that it can be done there.

**Dr. Bowman, Los Angeles, Calif.** In regard to Dr. Kennedy's question about tincture of belladonna and spasm in duodenal ulcer. The majority of residues in the duodenum are due to stenosis at that point. However, in case of spasmodic irritation we put them on belladonna for two or three days, because we cannot keep them longer. Belladonna has never cleared up spasm sufficiently to give us no residue; it is decreased and I have an idea that with a patient kept on it for a week or two, their spasm would disappear.

Dr. Bacon's remarks about not opening a stomach on an X-ray diagnosis in his town reminds me of several cases I have had come in bringing their X-ray plates with a diagnosis of cancer of the stomach. They had taken the plates with the patient lying on the abdomen and had failed to raise the hips or chest to take the pressure off the abdomen and the spine had made the defect; they had not taken the trouble to take the patient in the upright position. The patients had normal stomachs.

Dr. Alexander, when I make a mistake it is due to me and not to the X-ray; the X-ray must not be blamed for the mistakes; these are due to the person interpreting the shadows. I have made them; I can say so without blushing, because no one can practice without making mistakes.

In reference to Dr. Sweek's remarks that gastric ulcers are all medical, and that the average case which comes in has never been put to bed on rigid diet and proper treatment, the late gastric ulcer, if it can be excised, I would want taken out if it was in my stomach; if it is large, it may be malignant, the early gastric ulcers are medical cases. The teaching, when I was in college was that gastric ulcer is a common condition; I remember that in general practice, the number of gastric ulcers were enormous, but I think the majority are duodenal and the ratio is about three to one.



## SOME THEORIES AND A FEW FACTS ABOUT HEADACHE\*

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DR .G. WERLEY,  
EL PASO, TEXAS.

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This paper is confined to a general outline of the subject of headache, and no attempts is made to bring out those points belonging particularly to surgery and the specialties.

To begin with, I will state a few anatomical facts:

Neither the pia mater, the arachnoid nor the brain substance are supplied with cerebro-spinal sensory nerves. The optic thalamus is said to be sensitive to direct stimulation. The dura mater alone of structures within the skull has a cerebro-spinal sensory nerve supply. To it come the meningeal nerve from the maxillary division of the trigeminus, the anterior ethmoidal branches of the ophthalmic, the tentorial from the ophthalmic running backward from the cavernous sinus to the tentorium cerebelli, a recurrent branch of the fifth entering through the foramen spinosum and supplying the middle fossa and vault. The dura of the posterior fossa is supplied by the tentorial branches from the fifth and in addition by branches from the vagus and hypoglossus. The dura has a richer nerve supply at the base than at the vault corresponding to the clinical fact that tumors and other lesions at the base are most painful.

A little study of the medulla will show that the fifth nerve controls almost entirely sensory phenomena in this region. With its two nuclei, its roots extend continuously throughout the medulla from within the pons above to the second cervical nerve below. It is a very interesting anatomical fact that a part of the centrally coursing fibres of the vagus and glossopharyngeal end in the nucleus of the descending root of the fifth. Here we have a ready explanation of facial neuralgia and headache due to affections of thoracic or abdominal viscera.

It is now believed that certain painful affections such as angina pectoris and gall-stone colic are due to stimuli coming into the cord from afferent fibres of the autonomic and sympathetic nervous systems, there results an irritable focus with reflex pains felt in the corresponding sensory cerebro-spinal nerves. Thus we have pain in the arm in angina, and in the shoulder in gall-stone colic. Are head pains ever caused in a similar way? Considerations of anatomy would lead us to think so.

The chief terminal station for the afferent fibres of the sympa-

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This paper and the three that follow were read as a symposium on headache before the El Paso County Medical Society.

thetic in the cord is Clarke's Column. Now in the medulla the homologon of Clarke's Column is probably the solitary tract. Dogiel and Onuf found axis cylinder processes of certain cells of the sympathetic ganglia terminating around cells of the cerebro-spinal type. It is easily conceivable that the rami from the upper cervical ganglion may have central endings about the lower portion of the descending root of the fifth. And is it not likely that fibres of the sympathetic and autonomic type from the ciliary spleno-palatine, otic and submaxillary ganglia reach the medulla along with the fifth and other cranial nerves? How else are we to account for pain from the muscle of accommodation which receives no sensory fibres of the cerebro-spinal type? Granting that the structure of the medulla is similar to the cord we have a ready explanation of headache due to vessel spasm and accommodative errors. Also to reflexes coming from the heart, lungs and digestive tract, all creating an irritable focus in the medulla with pain referred to the fifth nerve, or if lower down, to the upper cervical nerves. This is but an extension of the theory of Mackenzie to the medulla.

*Migraine* according to Auerbach is a pressure headache. Most pains are due to tension, stretching, or pressure. Owing to the fact that the brain is enclosed in a rigid box, pressure pains are common about the head, such as those due to tumors, hydrocephalus, meningitis, active and passive congestion, etc. According to Auerbach on the subject of sick headache there is a disproportion between the brain and the size of the skull. In early life there are not attacks of pain because the fontanelles are still open or the bones are not yet rigid. As soon as ossification is complete, migraine begins to appear. In late life, according to the same authority, these headaches begin to disappear because there is absorption of bone and the skull again becomes thin and yielding. Of course the pain in case this theory were true, would be due to direct pressure on the sensory fibres in the dura mater.

A pressure theory for migraine has also been proposed by Jelliffe, who has suggested that in this kind of headache there is partial stenosis of the foramen of Monroe and by congestion of the choroid plexus, periodically, the stenosis becomes complete with over filling and distention of the corresponding ventricle. It is remarkable that no one has suggested trephining for relief of hemicrania. In this connection, attention is called to the fact that thyroid decreases the secretion of cerebrospinal fluid by its action on the choroid plexus. Thyroid has been used with success in the treatment of migraine in a number of instances.

Dr. Bois Reymond first advanced the vasomotor theory of headache in 1860. Among modern writers who accept this explanation in part or in whole, are Edinger, Oppenheim and Pal. Starr says that in migraine there is first a constriction then a dilatation. Pal looks



upon lead colic, gall-stone colic, the crises of locomotor ataxia, angina pectoris and other periodic attacks of pain of visceral origin as being due to paroxysmal spasm of the blood vessels. He has been able to demonstrate rise of blood pressure before the attacks, and has seen anemia of the retina due to vascular constriction. Haig says that the attacks of migraine are due to uric acid causing stasis in the capillaries and high blood pressure. But it is to be remembered that pain itself is a cause of high pressure. Rachford found increase of paraxanthin in the urine after the attacks. It is evident that more investigation is needed to establish the truth or falsity of any of these theories.

Some points in the diagnosis of migraine are: There is nearly always a history of heredity in this affection; it is unilateral only in about two-thirds of the cases; the attacks often occur at the menstrual time, it is as common among the poor as the well to do and the great majority of sufferers are women; a headache, that begins late in life is not migraine; a continuous headache is not migraine. A very important point is contraction of the pupil during the attack. Pain generally causes the pupil to be dilated. Migrainous symptoms may be engrafted upon other headaches as in brain tumor or syphilis. About two-fifths of all headaches belong to the type of migraine.

*Indurative or rheumatic headache comprises another two-fifths according to certain foreign authors—Edinger, Auerbach and others. We do not see it so frequently in this country. The chief peculiarity of this affection is that nodules from the size of a millet seed to that of a bean are found by palpation at the nape of the neck in the subcutaneous tissue and also in the fascia. They may be found in the upper back, at the insertion of the muscles at the base of the skull, in the temporal region and in the occipitofrontalis. They are hard, irregular in shape and not like lymphatic glands. With the removal of the nodules by heat and massage, the headache is relieved and remains cured. No one has succeeded in demonstrating a special lesion in the nodules though a number have been excised and examined microscopically. In view of the fact that streptococci have been found in muscles affected with rheumatism, it would be interesting to know the results of bacterial examination of these nodules. Rheumatic headache is ascribed to chilling by those who have observed it most. It begins in later life, is very chronic, and the pain is practically continuous. It starts, as a rule, in the occipital region, but may spread later to other parts. It yields temporarily to the salicylates. If it is really rheumatic, there should be some source of facial infection such as pyorrhea alveolaris, inflamed tonsils, cholecystitis or sinus involvement. However, such well known authorities as Edinger and Auerbach assert positively that local heat and massage suffice for a cure.*

*Exhaustion is responsible for a number of headaches. Some of these are due to neurasthenia, but the more common causes are over-*

work, lack of sleep, business worries, too frequent child bearing, etc. Masturbation and sexual excesses are sometimes the cause, especially in neurotic individuals and those suffering from exhausting diseases. The pain is characterized by its indefiniteness. Patients find difficulty in describing how they feel. They may call it a throbbing, a burning, a weight, a pressure, an emptiness. Certainly, it is never like the clear cut pain of migraine. It is often questionable how much of it is due to purely physical causes and how much is psychic. Organic disease must always be excluded. Brain tumor, dementia paralytica, arteriosclerosis, or cirrhotic kidney may all be mistaken for neurasthenia. Syphilis must be excluded.

The three types of headache just reviewed constitute the great majority of those seen by the general practitioner. But many cannot be put into any classification.

Of twenty-two cases of general disease, offering difficulties in diagnosis, with headache as a leading symptom, Cabot found the following: cerebral hemorrhage, 1; miliary tuberculosis, 2; typhoid fever, 2; sinusitis, 2; meningitis, 1; dementia paralytica, 1; osteomyelitis, 1; empyema, 1; tachycardia with myocardial insufficiency, 1; malaria, 1; stone in kidney with abscess, 1; fracture of the skull, 1; glomerulo nephritis, 1; psychic, 1; syphilis, 3; methemoglobinemia, 1; and unknown, 1.

Dr. E. A. Mayer, in a neurological practice finds, among his headache patients, forty-five per cent neurasthenic; six per cent hysterical; seventeen per cent organic (tumor, abscess, syphilis, meningitis); nine per cent gastro intestinal; and thirteen per cent due to diseases of the special senses.

Dr. Samuel D. Risley tells us that ocular disease or anomalies of the ocular apparatus are, in a large group of patients, the sole and sufficient cause of headache. Dr. Chas. K. Mills says that ocular defects alone (defects of refraction, even when severe) are rarely the sole cause of headache. There is generally in addition some neurotic state or toxemia.

It is just as well to remember that there is a type of individual suffering with what Mackenzie calls the "X" disease, who has many ailments and among others headache. Such patients have been "cured" by ovariectomy, colectomy, gastropexy, nephropexy, turbinectomy, osteopathy and Christian Science; but their chief characteristic is that no "cure" lasts, and the opportunity of "curing" them comes to many physicians. They are neurotic and perhaps at the bottom of their ailment is vagatonia or sympathicotonia, as Hess and Eppinger suggest; or perhaps they are born with defects of the organs of internal secretion. At any rate, the cause of their suffering lies deeper than is generally suspected. One reads much of certain headaches seen only a few times in a long practice. Such are those due to brain tumor or abscess, aneurysm of the basilar artery, cerebral

arteriosclerosis, lead poisoning, myxedema, leukemia. In making a diagnosis, it is well to consider the law of probabilities and to be slow in assigning one of these rare ailments as the cause.

According to Coggeshall and MacCoy, who studied 1700 cases of headache in Boston, the most common causes are anaemia, toxemia and neuropathy. Certainly constipation aggravates many cases. In the early part of this paper I discussed certain anatomical facts that would lead one to look for a focus of irritation as the exciting cause. Such foci should be always looked for in the teeth, nose and nasal sinuses, the eyes, the ear, or more distant organs. However, the number of cases of headache in which we can put our finger on the exact cause is as yet but a small fraction of the total number.

The treatment of headache depends entirely upon the diagnosis.

#### REFERENCES.

- Pain .....Richard J. Behan, 1914  
 Headache.....Siegmond Auerbach, 1913  
 Symptoms and Their Interpretation.....James Mackenzie, 1912  
 Brain and Spinal Cord .....Emil Villiger, 1912  
 Vagatonia .....Eppinger and Hess, 1915  
 Ziemsen's Encyclopedia of Medicine, 1876.  
 Dubois .....The Physical Treatment of Nervous Disorders, 1908  
 Coggeshall and MacCoy .....Journal A. M. A., Jan. 4, 1908  
 Edinger .....Modern Clinical Medicine, 1910  
 Symposium on Headache .....Pa. Med. Journal, Dec., 1907  
 Nervous Diseases .....Starr, 1913  
 Nervous and Mental Diseases.....Church and Peterson, 1906  
 Cabot's Differential Diagnosis, 1911.  
 Reference Hand Book of the Medical Sciences on Sympathetic Nervous System.

## HEADACHE IN THE DIAGNOSIS OF BRAIN TUMOR AND ABSCESS\*

BY HUGH CROUSE, M. D.,

EL PASO, TEXAS.

Headaches as a diagnostic aid in defining or localizing a brain abscess or tumor, must be weighed only as associated with other symptoms such as, persistent nausea, frequent vomiting, ataxia, hebetude, past pointings, papillitis, choked disc, mono-or hemiplegia, vertigo, localized tenderness elicited in skull percussion, the cracked pot sound of McEwan, nystagmus, either periodic or the complex nystagmus accompanying Barany's caloric tests, individual cerebral nerve manifestations, and the clinical story.

Starr gives 238 causes of headache, but it is of those arising from cerebral lesions caused by abscesses and tumors that I shall speak to you this evening and present some of my own cases which come under this category.

In diagnosing brain abscess or tumor, headache gives valuable hints, but is not of itself a reliable factor. Gross brain lesions have been found at autopsy which ought, pathologically, to have had headache as a symptom, but such was entirely absent during the entire illness.

Some brain lesion patients complain of two headaches, occipital and migrainous: In chlorosis, the pain is described as worse when sitting up; in trigeminal neuralgia, worse when lying down. Hydrocephalus internus and meningitis show the same features. There are headaches difficult to classify if the exact onset of brain lesion cannot be known, for some are worse when pus is gathering, and others may be intermittent, with months between attacks. The pain may be localized in the neck, when the focus is probably below the tentorium. It is tolerably safe to say that the lesion exists in the same area where the pain is constant. The character of the headache as adjectived by the patient, is not of great value, for the same symptom, arising from exactly the same focus of disease, will be individually described as throbbing, cutting, lancinating, boring, dull or sore. For the associated symptoms, the doctor's own knowledge and the text-books, furnish sufficient information.

Careful history taking in this, as in all complaints, is particularly important in isolating brain lesions as the cause of headache.

When headache symptoms, other than cephalgic have been elimi-

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nated by direct questioning of the patient, indirect ones should be put which will, very literally, bring matters to a head. The symptom of headache has more value where a brain lesion is suspected when it has not been associated in the patient's mind with any such condition, for psychological suggestion will have intensified the pain and blurred the pathological picture. But it is a good plan to find out by indirect questioning whether there is any insanity in the family, because very often, a member of it suffering with intense headache, is secretly brooding over the idea that he is "going mad" or is in for "softening of the brain," and is trying to get the doctor's opinion, without helping by frank confession of a dread which is adding psychological to physical pain. The learned laity, nourished on lurid medical science in the Sunday papers, know more than the doctor, that is, more of the improbabilities.

In brain tumors, headache is rather an accompanying than a leading symptom, but it is an early one and is often intense, the position of the pain not always corresponding to seat of disease, for it may be, say, frontal for years, then occipital. Trephining has been done in the wrong place because of great tenderness complained of.

Contrecoup points of reflex pain, if one may use such a term in speaking of the headaches of cerebral abscess and tumor, are numerous.

Almost one-third of cerebellar tumors occur in childhood and youth, and headache is a marked symptom. It is usually severe, occipital or frontal, and generally, in a sagittal plane, with tenderness also over the occiput.

It is more persistent in cerebellar than in cerebral tumors; in those of the cerebral hemisphere than in those of the base. It is severe in those that directly involve the meninges, being caused by intra-cranial pressure and irritation of the terminal filaments of the trigeminus. It is generally worst in the morning.

It is also more marked in tumors of rapid growth, irrespective of the nature of the pathological process.

It may be continuous, with exacerbations, but it may recur with a regular quotidian or tertian periodicity as in malaria.

With regard to diagnosis!

In abscess of the brain severe symptoms, chief among them, intense headache, come on rapidly, but, in chronic encapsulated abscess, the acute headache does not appear until meningitis or cerebritis develop.

In distinguishing between brain abscess and ear disease the headache is not merely in the ear, but in scalp and skull. In cerebellar abscess, the headache is occipital, with stiffness of the neck, though, in a stage of remission or latency, the pain may give way to drowsiness.

With an abscess in the temporo-sphenoidal lobe, (one of the "silent areas") there are no definite symptoms, and in the "dreamy state" mentioned by Ballance, there is no complaint of headache.

One author draws attention to the frontal headache in cerebellar abscess. When relieved by opening the abscess, the old frontal pain often returns when a drainage tube is re-inserted at dressing.

In cases where a severe frontal headache suggests a frontal sinus disease, the frontal sinus may be opened without finding any such condition. The pain often vanishes after the opening, to come again when the external opening heals, unless a new communication has been made with the nose.

The headache may recur without any real return of the disease but owing to a closure of the opening into the nose. Opening with a sound and allowing air to enter, relieves the pain.

In malignant tumors of the nose, headaches are a leading symptom, and when they continue after thorough drainage of the pus, a deeper affection should be sought, for the persistence of headache after proper drainage procedure should arouse one's suspicion of malignant neoplasms.

Zuckerkindl points out that the superficial position of the ethmoidal nerve in the anterior portion of the skull allows approximation swellings to cause pressure symptoms.

Constant right-sided frontal headache may be a localized symptom of malignant nasal tumor. In a case in the literature there was seen post-mortem penetration of the roof of the orbit and a growth of the tumor into the right frontal sinus. With primary thrombosis of the longitudinal sinus there is generally headache with mental dulness.

Where there is syphilis, the headache is nearly always most troublesome at night. It is a secondary sign, arising from changes in the vessels, periosteum or meninges, or, with the growth of a gumma, it is a tertiary one. Morrow regards headache, persistent, in those who have not inherited such a tendency and in whom there is no history of traumatism, to be strongly indicative of syphilis. It is generally diffuse, though, in a few, it may be most marked along the distribution of the trigeminal branches.

Manges says that patients who come to him suffering from what turned out to be small calcareous growths of the pineal gland, complained chiefly of a diffuse headache of a dull character.

Authors agree in saying that headache is slight or absent, and the general condition good when gliomata are present, but I have noted some cases where the headache was very severe, increasingly so, with much vomiting. In one, at death a partly necrotic mass was found in the brain cortex, unattached to the dura. It was not encapsulated, the size of a walnut, quite soft and proved to be a glioma. The headaches had been severe.

In another case; a woman, 42, there was dull headache for 3 years, vertigo and facial paralysis, choked disc, etc. At operation, a glioma

was found deep in the substance of the cerebellum, and grown outward toward the cerebellar pontine angle.

Many patients who come to the doctor with headache as a leading complaint, can often, when closely questioned, recall the fact of a blow or fall on the head which caused only slight pain at the time. The literature abounds in cases where a "sound box on the ear"; a whack from the cane of an irritable teacher; a fall, not thought serious; has started a degenerative process in the brain which remains latent until traumatic cerebrastrhenis, or in plain words, headache, drives the sufferer to a doctor, who generally finds allied symptoms of dizziness, fatigue, irritability, and, from the relatives, accounts of change in character.

The patient will tell you "it is not an ordinary headache," perhaps, but a dull pain with peculiar sensations, numbness, tingling, flushing, etc.

Focal diseases may be suggested by the pain being localized, somewhat paroxysmal and radiating in character. Drowsiness is a bad sign when there is dizziness and nausea.

Tenderness to pressure over the seat of pain may mean bone disease or meningeal adhesions, particularly when the pain is in sharp attacks and lasts for some time.

Old depressed skull fractures are often responsible for headache, irritability, and excitant to epilepsy, and the value of elevation of these fractures in relieving the dull headache so complained of, is well known.

In a case which came to me, operated on by Dr. Cushing for an endotheliomatous tumor, there was a good deal of headache post-operatively if she looked at anything for a length of time. The pain was on the right side, back towards the ear.

In another case, seen by me and operated on by Dr. Dandy, of Johns Hopkins Hospital, for tumor of the left lower frontal area, the headaches came on periodically, varying in intensity, and from the back of the head up, then became excruciating, with nervous contraction of muscles and a feeling of an abscess "throbbing and bumping" in the head. A tumor was found in the left frontal area, close to the hypophysis, and was of the endotheliomatous type.

In November, 1915, a young married woman, of 31, came complaining of headache, dizziness, aching in right arm and across shoulders, also in left arm. There was a history of a severe fall, the blow on left orbital region, when she was about 5, and of sometimes striking the head when diving. She had always had periodic headaches, even in childhood. When 25 they became worse, and different in character. For the last 3 years she had dizzy spells and increasing headache in the right supraorbital region. Also had backache. The X-ray picture showed very beautifully a fracture through the cribriform



plate, in all probability of the type allowing improper dissemination of air in the sinuses.

In February, 1916, I had a patient complaining of pain in the left side of head and left ear. Eight days later, this side of the face was swollen, and the pain in ear subsided. Four days later she became unconscious. There was a discharge from left nostril half an hour before death, but, despite careful investigation, no route for the escape of fluid from brain was found. Autopsy showed a large round-celled sarcoma, a mass of degeneration, in the posterior portion of the left cerebellar hemisphere, about  $1\frac{1}{2}$  inches in diameter. When sectioned, this was partly pinkish and partly streaked yellow.

A married woman of 41, with 4 children, was seen by me whose chief complaint was of periodic headache of 2 years standing, varying in intensity, with nervous contraction of muscles and blurred vision. This was an irregular form of headache, with chills and low temperature and sometimes of a diffused type. The lesion was in the cavernous and superior longitudinal sinuses, and was caused by a mastoiditis of many months standing, secondary to an infection.

There was nothing to lead to localization of area; the diagnosis was based on the primary infection between the brain lesion and the sinus infection.

Another case of mine was a man with dull persistent headache, with hebetude. The case had been diagnosed by a doctor in Arizona as one of apoplexy on account of upon arising one morning there were symptoms of left hand plegia.

When the case was studied, there was evidence of a lesion in the right motor area. The blood and spinal fluid gave a negative Wassermann. Autopsy showed a disseminated glioma in the base of the right cerebral hemisphere extending upwards through the hemisphere to the cortex and involving the right motor area. There was also hebetude and choked disc.



## SPINAL PUNCTURE IN RELATION TO HEADACHE.

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BY M. B. WESSON, B. S., M. D.,EL PASO, TEXAS.

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Rachicentesis, or lumbar puncture, several years ago was looked upon as a very dangerous surgical operation. However, within the last few years we have ceased to look upon it as an operation at all, but rather regard it as one of our most useful therapeutic and diagnostic aids. Lumbar puncture is dangerous if it is improperly done, or if a lumbar abscess is present and the infective organisms are pushed into the spinal canal. Headache may follow puncture due to equilibrium disturbance, and medullary deaths may occur. Allard has collected 23 deaths within 24 hours of a puncture, where there was an obstruction of the foramen of Magendi. Cramer (in 1912) found 38 deaths in the literature: 28 were cases of brain tumor; 3, aneurism; 2, echinococcus disease, or hydrocephalus; 2, uremia or tuberculous meningitis; 1, epidemic meningitis, and remainder not classified. He further asserted that headache never occurred following a puncture except when a large amount of fluid was removed.

Before the discovery of the antimeningitis serum, symptoms were relieved and spinal meningitis cases often were cured by lumbar puncture through the relief of pressure and the draining of toxins present in the fluid. One of the first symptoms of meningitis is an intense headache, and this is practically always relieved by puncture. The headache is due to increased intracranial pressure. Eight years ago, when meningitis serum was first used, inexperienced doctors gave the serum by means of a syringe. The pioneer manufacturer's excuse for putting it up in that form was that the serum was going to be used by doctors who knew nothing of asepsis and that less damage could be done by pressure than by running the risk of the surgeon contaminating the serum. I had a long correspondence with the manufacturer over this point, with the result that they put up the gravity package. I have never seen any bad effect from the puncture itself, nor from the use of meningitis serum; but, I have seen a number of cases where meningitis serum was given under pressure, by means of a syringe, and in every single case following injection of serum an intense headache occurred. In our little 1912 epidemic, the laymen were, of course, afraid of serum and you could not blame them, for as one mother said, "My 14 year old boy was lying down, reading a

magazine, apparently not very sick; serum was given him, a headache followed so intense that he beat upon his head with his fists, and within 15 minutes he was dead." I have always contended that such deaths were not due to the toxicity of the serum, but to an increase of intracranial pressure, and I published this fact in June, 1912; a year later Simon Flexner, in his report warned against injections with a syringe. Just as the headaches are caused by an increased intracranial pressure, so can they be relieved by decreasing this intracranial pressure. In every case of epidemic meningitis that I tapped, I found the patient complaining of severe headache, and after draining out the fluid the headache disappeared: On injecting the serum, the patient would go to sleep, but would often wake up two hours afterwards with a return of the headache, as the pressure returned.

Five years ago I had a case of hydrocephalus upon which Dr. Elsberg (New York Neurological Institute) had done a double occipital decompression. The man's head was shaped like that of a "sugar-loaf" Indian, and he complained incessantly of headaches. I did a lumbar puncture, and removed one and a half liters of fluid. The headache disappeared, but returned in about a week as the fluid reassembled. This procedure was repeated every ten days for two months, with immediate relief of headache each time. Then I lost sight of the patient.

In 1894, Dupre applied the term "meningismus" to a group of symptoms simulating meningitis due to toxins belonging to acute fevers. The clinical features are headache, vomiting, twitching, convulsions, retraction of the head, squint and rigidity, and often the temperature is raised. Spinal puncture alone is often curative.

Typhoid meningitis has as a symptom a most marked headache. Spinal puncture brings immediate relief. In cases of acute serous meningitis, headache is most annoying, and lumbar puncture discloses often a pressure from 100 to 300 m. m. of water. Relieving this high pressure, relieves the headache. The normal pressure of the cerebral fluid is from 60 to 100 mm. of water. This is raised in intracranial tumors, abscesses, hemorrhages and meningitis of all kinds. In cases of brain tumors it may reach 1000 mm. In tuberculous meningitis there is a very marked frontal headache in adults, while in children the headache is diffuse. Puncture is of great value in relieving this symptom, and Freyhan and Neisser have reported cures of tuberculous meningitis due to lumbar puncture alone. The fatal outcome of this disease is due to a ventricular distension, and if the deleterious effect of this distension can be overcome by repeated punctures, the patient's life may be saved. Osler, of course, stated that if a case of tuberculous meningitis gets well, that in itself is good evidence that it was not tuberculous meningitis, but, nevertheless, Freyhous and Neisser's observations are interesting.

Haynes reports some cases of septic meningitis in which not only the headache was relieved, but the cases were cured by immediate drainage through a lumbar puncture. Curschmann, in 1911, reporting cases of serous meningitis, influenza meningitis and one case of streptococcus meningitis, secondary to an ear infection, in which headaches were relieved and cases cured by puncture.

Quincke, last year, advocates the use of lumbar puncture in all cases of headache attributed to cerebrospinal pressure, and even advocating it in many cases of brain tumors to relieve headache, and asserts that he has seen a complete subsidence of choked disc follow it.

Chorea is an infectious disease, and not a disease of the nervous system, according to Passini. Choreic movements are the results of an irritation of cerebral tracts passing from the red nucleus to the dentate nucleus. One of the most annoying symptoms of chorea is headache, and he found in a series of five cases that single lumbar punctures absolutely cured three. From 30 to 40 cc's of clear, sterile fluid, under high pressure, was drawn off. He believes that puncture before irreparable lesions are installed, has a direct curative action.

The headache following a debauch is due to increased pressure, and to the internal hydrocephalus that accompanies it, according to Steinbach. He does not believe that the delirium tremens is due to alcohol in the spinal fluid, as stated by Schottmuller, but believes it is due to a "between toxin." Puncture relieves the pressure and at the same time gets rid of part of the toxin that has found its way into the fluid. In 75 per cent of the cases, he has found a very high pressure, and in the remaining cases there was a relative high pressure—nothing unusual to withdraw 100 ccs. of fluid. The relieving of the pressure stopped the headache and the delirium, and most cases were able to sleep without drugs. In 15 cases of severe headache in Malta fever, typhoid and other infectious diseases, Rogers and Baumel obtained marked relief and no bad effects by withdrawing from 10 to 30 ccs. of spinal fluid, and repeating as often as necessary. They believe that soluble toxic products of the infective organism circulates in the spinal fluid, causing congestion and hypertension. Puncture relieves the pressure, removes the toxins and decreases the intoxication of adjacent nerve centers.

The cephalalgia accompanying dysmenorrhea is a "bugbear" to every internist, and the source of much of the morphinism we have to deal with. The following case may be of interest as the headache was cured by lumbar puncture:

Mrs. S, aged 36; during the past 15 years has had a number of pelvic operations, the later ones to correct adhesions left from preceding incisions; has always suffered a week or ten days out of each month at time of catamenia, with a severe pain in neck and back of head; felt as if there was a pressure at base of brain that caused retraction; used ice packs on back of neck, and generally had numerous hypodermics of morphine. I did a lumbar puncture and drew off, under high pressure, two ounces of clear, sterile fluid. The headache at once disappeared, and has not returned, though six months have elapsed.



Fischer depends upon rachicentesis to control convulsions and headache in intestinal toxæmia, pneumonias, scarlet fever, measles and diphtheria.

In a case of subacute parenchymatous nephritis, that had existed eight weeks, Reusch cleared up all symptoms, except headache, in one month. Lumbar puncture was done, 13 ccs. of fluid removed and headache disappeared at once; the blood pressure dropping from 190 to 110 mm. Four hours later, however, the patient died. An autopsy showed a hemorrhage in the internal capsule, evidently due to the sudden change of pressure and the ruptured degenerated cerebral vessel.

Fry, in six out of eight cases of uremia, obtained permanent cessation of headache by means of lumbar puncture.

Kras, in a case of tetanus, washed out the spinal canal daily with normal salt solution, and obtained a permanent cure, hence cured the headache also.

Tetany, according to Gaujox, follows gastro-intestinal disturbances, which produces an intoxication. Galliard relieved this auto-intoxication, due to the decomposed and fermented contents of the dilated stomach, through the action of an emetic, and thereby arrested attacks of tetany. Numerous observers have isolated toxic products from the stomach contents in cases of tetany, and Albu has attempted to show that intestinal parasites excrete a substance that has a toxic action on the organism. This increased excitability of the neurons is due to toxins circulating in the spinal fluid and is relieved immediately by lumbar puncture; in practically all cases of tetany the spinal fluid is found to be under great pressure, and when the pressure is relieved and the toxins removed, cases recover. This is well illustrated by a case I saw last year, that was brought in with a tentative diagnosis of tetanus following vaccination.

The child had been sick about ten days when I saw it, and was a perfect typical text book picture of tetany. There were intermittent muscular spasms, most marked in the hands and feet. These were preceded by sensory disturbances of pain, numbness and tingling. The upper extremities (both sides) were affected first. The fingers were flexed at the metacarpo-phalangeal joint and the phalanges extended; the thumbs were adducted to almost the little finger; the wrist was flexed in an acute angle, and the whole hand drawn to the ulnar side. The feet were strongly extended in the equino-varus position. The eyes were rolled upward, and to the left, so that nothing showed except the sclera; all of the other typical signs of tetany were present. Bowel movements were very foul, and continued so throughout the entire illness, in spite of frequent use of calomel and castor oil. No intestinal parasites were found. Lumbar puncture, as a daily routine, was started, and each time a large amount of clear, sterile fluid, often under great pressure, was removed. After each tapping, the child became quiet. At present the child shows no bad effects of the experience, other than a little interference of motion in walking. I believe this was a tetany due to some toxic substance formed in the stomach and intestines, and that had not the toxins in the spinal fluid and the pressure from the central nervous system been removed, the child would have died, in fact would have been doubly sure of death because of the toxins and the pressure.



Of course we know that the parathyroids have a function in destroying these toxins, and that when they are removed, tetany immediately follows unless thyroid extract and calcium salts are given.

In the cases of young babies, we do not know when headache exists, but I believe we have a right to assume that when we relieve the apparently uncontrollable paroxysms of whooping cough by means of lumbar puncture, we have stopped headache. Further, when we have stopped the tossing about of an infant with a bulging fontanel, and it becomes quiet and apparently comfortable following lumbar puncture, I believe we are justified in assuming that we have relieved headache—and I have had the good fortune to treat a number of these infants.

In conclusion, my experience in over 800 cases has been that relieving excessive intracranial pressure by means of lumbar puncture always relieves headache, and, furthermore, my observation has been that increasing intracranial pressure, by injection of the spinal canal with a syringe, causes headache.

## HEADACHE IN EYE, EAR, NOSE AND THROAT WORK\*

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BY E. R. CARPENTER, M. D.,EL PASO, TEXAS.

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Since headache is usually a reflex symptom, and since the eye is so intimately associated with the nerves involved in headache, it is not surprising that this organ is so important in dealing with the subject.

Certain branches of the fifth nerve are often involved in refractive errors, as well as in iritis, glaucoma, choroiditis, optic nerve trouble and other diseases peculiar to the eye.

Refractive errors are responsible for many of the eye headaches and it is interesting to know that fifty per cent of such patients referred by the general practitioner are relieved by proper correction with glasses and allied treatment. Of course, the majority of these patients have been previously investigated as to other causes. However, various authorities estimate that one-half of the troublesome headaches are due to eyestrain. Hypermetropia and astigmatism, or a combination of these two refractive errors are associated with the majority of refractive headaches. Frontal and supraorbital headache combined, are usually from hypermetropia or astigmatism, although all forms of headache occur from these errors. Myopia alone is not so likely to cause headache. Children with headache should always be examined for refractive errors. Many presbyopes suffer with refractive headache due to overtaking of the ciliary muscles with refractive head-dened lens and can be relieved only with glasses, both for latent trouble and for reading.

Imbalance of the extraocular muscles is responsible for a small percentage of headache, and no eye trouble presents more difficulty to relieve than this condition. Slight chronic irritation in one eye may cause a chronic headache through disturbed innervation to the eye muscles.

It is advisable in practically all eye examinations for headache, to employ a cycloplegic, if the patient is under forty years of age and at times, even beyond that period. With a cycloplegic, the refraction can be accurately estimated, while at times, it is also invaluable as a therapeutic agent in relaxing a stubborn ciliary muscle and by allowing the choroid and retina to recuperate. It is almost needless to mention that none but a specially trained physician is competent to correct refractive errors in patients suffering with headache. Heredity plays an important part in refraction and this point should be gone into carefully, especially with children.

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\*Read before El Paso Medical Society, May 15, 1916.

Headache from nasal origin is not nearly so frequently met with as it is from the ocular source. Nasal headache is usually located in the frontal or supraorbital region. Purulent diseases of the frontal sinus is often overlooked in estimating the source of headache, while the sphenoid and other accessory nasal sinuses are less frequently a complication in this trouble. Recurring slight colds in the head cause an annoying headache in some people by occluding the ventilation to the sinuses through congestion around the orifice of the opening into the nasal cavity proper. As a rule, in such cases, there is some slight abnormality present, as a very narrow nasal passage, or a large middle turbinate that presses readily by the slightest congestion, or a deviated septum is, at times, the disturbing element. Headache is frequently met with through constant pressure somewhere in the nasal cavity. Small polyps are sometimes found high up in the nose as a causative factor, but enlarged middle turbinates are more likely to be found pressed against the septum. In fact, as stated, any constant abnormal pressure any place in the nose may give rise to troublesome headaches. Adenoids may cause headache in children and even in adults, through the chronic congestion they keep up in the posterior nasal region. At times, a toxin originates from the adenoids as well as from the tonsil which is annoying to the patient through headache. I have seen several such cases. Simple chronic rhinitis or pharyngitis may be accompanied by annoying headaches. The teeth should always be inspected in obscure cases of headache, as reflex pain in the head is not uncommonly met with from this source.

Chronic or recurring headache may result from ear disease, but usually, there are other ear symptoms which suggest the source of the trouble. An old chronic discharging ear with cholesteatoma or mastoid involvement may cause headache, either through local disturbances or through the deleterious effect on the general condition of the patient. The intimate relation of brain abscess, lateral sinus infection and headache should never be overlooked in patients who have a history of discharging ears. Not only must a careful local examination be made, but a detailed history is at times invaluable, as the drum and middle ear may appear practically normal since healing of these parts occurred following the intracranial infection, which became chronic and may persist, even for years after the original infection.

In connection with this subject, sphenopalatine ganglia neuralgia should be considered. The pain is in the root of the nose, and in and above the eye, in the upper jaw and teeth, and radiates to the occiput, neck, and shoulder blade, as described by Dr. Sluder of St. Louis.

This trouble is due to involvement of the sphenopalatine ganglion, from extension of a local inflammation in the nose, or at times from a general systemic toxic condition. It is relieved by local applications, over the site of the ganglion, or by injections of phenol-alcohol, directly into the ganglion.

## PIONEER PRACTICE IN THE SOUTHWEST.

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BY HOWARD THOMPSON, M. D.,  
EL PASO, TEXAS.

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When the writer came to the Southwest over thirty years ago, medical men of respectable standing, were relatively speaking, "rare birds." All of the permanent army posts were supplied with surgeons; as were also all of the Indian agencies. But all of the army posts and Indian agencies in Arizona, New Mexico, and West Texas, would have been unable to muster forty medical men. There were doctors at Las Vegas, Santa Fe, Albuquerque, Socorro, Deming, Silver City, Las Cruces and El Paso. But there was no doctor at Ysleta, San Elizario, Sierra Blanca, Van Horn or Toyah. A man of some attainments, but a frightful drunkard, practiced medicine at Pecos City. Carlsbad and Artesia were not even on the map, and Roswell was a mere hamlet with a good-sized country store. Oro Grande, Alamogordo, Cloudcroft and Carrizozo, were not even thought of. There were two creditable doctors at White Oaks, which at that time was a brisk little mining camp, with some most excellent people, churches, schools, and nice homes.

But the country was crude and raw; although in its extreme wildness very beautiful. The common talk of the ranch people ran on the exploits of "Billy the Kid," (a desperate bandit and murderer) who had been recently killed, on the recent raids of Geronimo and Victoria, or the probable apprehension and summary execution of the latest band of horse or cattle thieves. Of books there was a great dearth; and good newspapers were scarce and no longer new. But the ranch people were bright, capable, and full of a beautiful kind of rough-and-ready hospitality.

The diseases which the physician of those times was called upon to treat, were similar to those of the present time; but they were apt to be aggravated by lack of treatment at the proper time. Gunshot wounds, and knife wounds, were unpleasantly frequent.

Payments for medical services were often made in checks on banks in El Paso, Albuquerque, Santa Fe, Las Cruces, or Colorado City. Checks passed as currency, in the country remote from the railroads, and so far as the writer knows were never raised, disputed or protested. The common honesty of the ranch people, and cattle men, was then, as it is now, a cause for pride and congratulation. A curious



phase of medical practice in the Southwest grew out of the widely scattered condition of the people, and the still more widely scattered condition of the doctors. The writer was the physician at Mescalero, N. M., about twenty miles due north of where Cloudcroft is now built. The nearest physician to him was Dr. M. E. Taylor (of blessed memory) the surgeon in charge at Ft. Stanton, 36 miles northeast of there. Dr. Payden and Dr. Alexander Lane were at White Oaks, about fifty miles to the northwest. To the southwest, the nearest doctors were at Las Cruces and El Paso. There may have been physicians at Valentine, Marfa and Alpine; the one at Pecos was a broken reed to lean upon, and the nearest was probably at Colorado City. On account of this widely scattered medical faculty, we were often compelled to make exhausting professional trips.

The writer once went over 200 miles, to attend a ranchman's wife in confinement; on another occasion 140 miles to attend a young man with peritonitis. Trips of 50 miles or more, on horseback, over mountain trails, were not unusual. But the people were (in the main) so grateful, so honest, and so kind; the mountains and plains so beautiful; the food, be it never so plain, was so seasoned with the hunger of youth and exercise in the open air, that life was worth living, and sleep was sweet and dreamless.

Until 1887, it was the universal custom of the country, for the men to go armed. The favorite weapon was the Colts 45 revolver, "sawed off." The writer was once inveigled into carrying one of them, with a belt full of cartridges (pronounced *catridges*), on a 30 mile trip; but was compelled to hang both weapon and cartridges over the horn of his saddle, long before the half-way point of his journey had been reached.

It may not be amiss, at this point to say something about Indian medicine and surgery. When the writer was a boy, in the country, a great deal used to be said, (especially in the newspapers and almanacs) about the rude, but effective skill of the noble red man in medicine and surgery. But an intimate knowledge of blanket Indians acquired at first hand, will cause complete disillusionment. Never was a greater humbug perpetrated on the American people, than the notion or belief, that by some hocus pocus of getting close to nature, the American Indian had some kind of occult knowledge of medicine and surgical science, superior to that of civilized people. As a matter of fact, it would be hard to find a people more densely ignorant of medical science than the North American Indian in the blanket stage.

But in time the railroads came; and with the railroad came new people. The little Pecos Valley road pushed up from Pecos City to Roswell, and Carlsbad and Artesia were started, and Roswell began to grow. Soon after that the Southwestern was built to a junction with the Rock Island, and presto! in a few months, or two or three years, at most, we had Cloudcroft, Alamogordo, Carrizozo, young doctors,

railroad surgeons, hospitals, serum remedies and professional jealousies galore.

But the recollections of those past years are extremely pleasant. There were experiences growing out of the unsettled conditions of this vast region, which by no possibility can ever occur again within the limits of the United States. The writer knew, all too well the bad man, with his Colts sawed off, the horse thief, the cow thief, the land grabber, and the water rights thief; but to offset them, were the acquaintances and friendships, formed with big-hearted ranch men and women, and army surgeons. Some of these friendships last to this day. The children and grandchildren of those hardy ranch people, will form a substantial, dependable and conservative element, in the upbuilding, and population of the great Southwest.

## RETROVERSION—ITS CLINICAL PATHOLOGY\*

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DR. A. C. CARLSON,  
JEROME, ARIZONA.

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In bringing the subject of retro-displacement of the uterus before you I am well aware of the fact that I shall have nothing new to offer you and further it is a subject devoid of any particular interest.

At present the men who give this subject any particular thought are divided into two groups: First, those with the Mayos who believe that a retroverted uterus unassociated with other pathology is considered normal, and go on to cite numerous cases in which various ligament and suspension operations have been done with no improvement to the patient's condition; while on the other hand we have men who are convinced that the retro-displacement alone is sufficient to impair her health. Hence I will consider the pathology of retroversion and hope to show you that this displacement gives rise to various pathological lesions responsible for much discomfort and suffering, and that both the primary and secondary lesion, which I believe to be the essential pathology, can be alleviated by the proper surgical procedure.

You are all familiar with the various supports of the uterus and understand the mechanism involved: the part played by the intra-abdominal pressure upon the posterior surface of the uterus; also the part taken by the intact pelvic floor, as well as the action of the various ligaments, of which the utero-sacral and cardinal ligaments are the most essential. The cardinal ligament is a term used by British writers to describe the pelvic connective tissue extending laterally from the level of the internal os to the pelvic wall.

Retroversion secondary to salpingitis—pus tubes rolling in the cul-de-sac and by adhesions dragging the fundus backward, or retroversion dependent upon tumor formation, I shall not consider. I am speaking only of uncomplicated retroversion in the nulliparous or parous woman.

When once the fundus of the uterus becomes retro-displaced the driving force of the intra-abdominal pressure tends to keep it so, and with the give and increasing laxity of the ligaments the position becomes permanent. With this displacement the broad ligaments are twisted, causing a congestion of the extensive network of veins, known as the pampiniform plexus, which finally results in a varix of the broad ligament. This is exactly similar to the varicocele in the male, and it is relatively just about as frequent. You are all familiar with

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the train of symptoms which varicocele causes, not all of them neurasthenic by any means. Further, passive venous congestion interferes with the ovarian circulation, which quite often is the cause of pathological conditions of the ovary. The cyclic changes of ovulation are changed. After the rupture of the graafian follicle and a formation of the corpus haemorrhagicum resolution occurs irregularly. The resulting corpus luteum with impaired blood supply undergoes retrograde changes and develops into a corpus luteum cyst. Patients with these lesions suffer pain referable to the congested pampiniform plexus and the degenerate ovarian structures.

There is, as Spaulding has said, no more potent cause for spontaneous abortion than retroversion of the uterus; and certainly it will be admitted that no woman has been benefited by going through the experience of gestation interrupted before term. This unnatural expulsion of the product of conception aggravates the pathology already existing in the endometrium.

Ideas regarding the pathology of the endometrium have undergone a great change during the past few years due largely to the routine examination of curettings from practically all patients operated upon in some of our large gynecological clinics.

True endometritis is either tubercular or carcinoma of the fundus. Other forms will be found to be associated with metritis and parametritis due to the invasion of micro-organisms, either post abortum or post partum; so that the symptoms of increased glandular activity and leukorrhea in retrodisplacement is not an endometritis but rather part of the menstrual cycle which has been aggravated by the passive congestion in the endometrium. What was formerly supposed to be an inflammatory change in the endometrium we now know to be merely the picture observed at different periods of the menstrual cycle. So we interpret the round cell infiltration, hemorrhagic and exfoliative changes as simply premenstrual, menstrual or post-menstrual mucosa. Therefore, considering this to be a fact, I believe it well to state, the use of the curette to be one of the past, and an instrument that we would be well off without. For to alleviate the hypertrophied endometrium with its symptoms it becomes necessary to correct, by operative procedure, the position of the uterus and thereby relieve the passive congestion.

Regarding the operative procedure, which is the only treatment worthy of consideration, I wish to say a few words. The ventral suspension and fixation operations are only to be condemned. The broad and round ligament plication operations are of value principally in cases where it is necessary to remove tubes for salpingitis, because they accomplish the covering of raw areas otherwise left denuded. The shortening of round ligaments in the inguinal canal, as by Alexander, is of value in certain selected cases, principally nulliparae. However, retroversion in a certain proportion of these cases recurs. The Baldy-



Webster operation, which draws the round ligaments through the broad ligaments and attaches them to the posterior aspect of the uterus, may also be mentioned only to be condemned. The belt-like loop made by the round ligament around the uterus constricts the arterial and venous anastomosis of the utero-ovarian circulation, and this, if anything, is making things worse. Dr. Pollock, of the Long Island City Hospital, New York, has used this procedure in over 300 cases and has not a good word to say for it.

There is, however, one operation which, when properly performed, corrects the mal-position in a satisfactory manner and does not give rise to any post operative complications. This operation is the Gilliam round ligament suspension. Dr. Craigen of the Sloan's Maternity Hospital has had the opportunity to see numerous patients on whom this operation has been performed and has further seen them through subsequent pregnancies and labors without a return of the previous trouble. He highly recommends this as the operation of choice.

In conclusion I wish to emphasize the indications for operative procedure for the correction of malposition of the uterus, and I feel we shall continue to be gratified by the relief afforded patients from the annoying symptoms commonly associated with this condition.

In getting a few reports of cases operated upon at the United Verde Hospital in the past four years I was only able to reach four in regard to their present condition.

Case 1. Mrs. T. G.; age 24; Italian. Menstrual history negative. One child, 5 years, no abortions or miscarriages. About three years before consulting a doctor she started to ail; menstrual periods became painful and later on accompanied with vomiting. Pain was over ovarian region and back. The last three or four months before operation she was troubled with vomiting every day after eating with no relation to the kinds of food taken. She thought she was pregnant, although she menstruated regularly as before. She consulted Dr. A. J. Murrietta to determine whether she was pregnant or not. Examination revealed no uterine enlargement, but a third degree retroversion, which was not movable, with tenderness over both ovarian regions. Operated upon June 1, 1915, small cyst in the left ovary which was repaired and Gilliam round ligament suspension operation performed. Patient menstruated while in the hospital without distress. I personally examined above patient on April 3, 1916, and found uterus in good condition.

Case 2. Mrs. A. N. A., 30 years; American. No children, no abortions or miscarriages. Has always had painful menstrual periods, but becoming more so. Has been very weak and nervous during these periods and on several occasions vertigo and fainting ensued. The pain she expresses as terrific in the back and over both ovaries. Examination revealed retroversion, not movable, and tenderness over both ovaries. Operated on October, 1914. Both ovaries cystic, which were repaired, adhesions in cul-de-sac separated and Gilliam round ligament suspension operation performed. Uneventful recovery. Menstrual periods came without pain, and moderate flow. Examined April 4th, 1916, uterus in good position.

Case 3. Mrs. A. P., age 25; Italian. Four children. No miscarriages or abortions. Menstrual periods every 29 or 30 days, lasting 3 or 4 days. Trouble started

about two years before operation with pain in the back, during menstrual periods, which was gradually getting worse. Flow was increasing in amount. She had leukorrhea almost continually. The pain, however, was what she complained of and consulted for relief. Bimanual examination revealed retroversion, not movable, left tube thickened and tender, left ovary enlarged and tender, and appendages of right side negative. Operated on August 4, 1914. Left ovary almost completely cystic, left tube enlarged, discolored and soggy, no pus, few adhesions in cul-de-sac. Removed left tube and ovary, separated adhesions and Gilliam round ligament suspension operation performed for the retro-displacement. Patient is enjoying good health with annoying symptoms relieved. Position good at present writing.

Case 4. Mrs. J. P., age 34; Italian. Four children, aborted with fifth and sixth pregnancies, denies being self-induced. During both these pregnancies and for another year before operation she has had severe backaches during her menses. The menstrual periods have always been regular, lasting from three to five days. But at this particular time she was troubled a great deal with flatulence, and vomiting and for about six months previous to the operation always took to bed. Patient constipated and had constant leukorrhea.

Bimanual examination showed retroversion, not movable, with slight tenderness over both ovaries.

Operated on August, 1913, adhesions separated and Gilliam round ligament suspension operation performed. Patient entirely relieved. Confined November, 1914, and good position still retained.

#### REFERENCES.

Journals A. M. A. and S. G. & O. and notes from clinics of U. of M. and L. A. County Hospitals.

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## THE TREATMENT OF PLEURISY WITH EFFUSION\*

DR. A. G. SHORTLE, M. D.,

ALBUQUERQUE, N. M.

Pleuritic effusions may occur from so many different causes that I shall only attempt to enumerate a few; rheumatism, pneumonia, malignant growths, syphilis, streptococcic and staphylococcic infections, trauma and last and most common of all, tuberculous infection are among those come to mind.

It is not the purpose of this paper, however, to consider the treatment of any form except the tuberculous and the so called idiopathic types, for the latter are almost invariably tuberculous, nor to refer to the transudate occasionally encountered in the pleural cavity, for I have nothing new to suggest in their treatment.

In cases having a tuberculous origin, however, we have used a treatment for almost four years at the Albuquerque Sanatorium that we believe to be a distinct improvement over that recommended in the text books and one that has been largely developed by ourselves.

I think it well first to briefly review the treatment advised in our best text books and it can be done very briefly for in effect it amounts to early paracentesis in almost every text book consulted.

Taking first, Osler (1); "Early and repeated aspiration of the fluid is the most satisfactory method of treatment." Musser and Kelly (2) give about the same advice except to question the desirability of the procedure in small effusions. They further give the doubtful advice that breathing deeply following the cure of the pleuritis will often prevent the development of tuberculosis in the lungs, advice that is certainly at direct variance with all our modern conceptions as to the desirability of rest in tuberculosis. Such an excellent work on tuberculosis as that of Kleb (3) advises that "in order to get rid of the exudate the amount of fluid ingested should be cut down to the minimum and the activity of the kidneys increased. For this purpose nitroglycerin (1-100 to 1-50 gr.) and infusion of digitalis,  $\frac{1}{2}$  oz., every four hours may be given or it may be necessary to add to the above acetate of potassium or sodium, the object being to make the amount of liquid excreted greater than that which is drunk. If this cannot be done then resort must be had to the aspirating needle."

That excellent English internist, Samuel West, (4), advances some reasons for doubting the desirability of paracentesis in the majority of cases but ends by endorsing it for all but small exudates. He

\*Read before the Second Annual Meeting of the Southwestern Medical and Surgical Association at El Paso, Texas, December 9-11, 1915.



makes the pertinent statement that "paracentesis has become so much the routine treatment of serous effusions that no doubt it is very often performed when it is not necessary and for any long series of cases that would show the natural history of the affection, i. e., the prospects of cure without paracentesis, we have to go back to years ago when the operation was not so common." He here quotes: "Louis gives a series of 229 consecutive cases of serous effusion out of which 224 got perfectly well without paracentesis. Only one of this number died and that was the result of pericarditis. A similar series of cases has been published by Walsh."

Certainly this compares favorably with 6 per cent of deaths reported from the Massachusetts General Hospital treated by paracentesis.

At any rate it appears that the treatment for pleurisy with effusion as recommended by our best text books differs little from that of Hippocrates over 2,000 years ago, for the father of medicine recommended paracentesis in just such conditions as it is used for today.

In recent years, however, a few men have ventured to express some doubts as to the desirability of drainage in the tuberculous types of this condition.

L. Spengler (5) noting that spontaneous pneumothorax often resulted favorably in cases of lung tuberculosis, was prompted not to interfere with immobilization produced in a tuberculous lung by nature's own efforts, and so did not drain pleuritic effusions unless for relief of pressure symptoms. Forlinini was led to the first use of artificial pneumothorax through observing the marked symptomatic improvement occurring in some cases of pulmonary tuberculosis following the formation of a pleural exudate. Achard (6) in hopes of stimulating the absorption of the exudate introduced sterile air into the pleural cavity but some time later began to drain the cavity and replace the fluid with air, largely to facilitate the escape of the fluid. Koniger (7) studied the effects of pleuritic effusion upon the underlying tuberculosis of the lung. He found its effects were decidedly favorable and often resulted in spontaneous cure. He ascribes the beneficial effects both to compression of the lung with its consequent rest and to the formation of antibodies which tend to bring about immunity. He therefore advocates late tapping, at least two weeks after the onset of the disease. Moderate effusions he thinks often do good and require no tapping, while in marked tuberculosis with cavity formation he allows the effusion to remain indefinitely unless there is so much as to cause pressure symptoms and then he would only remove a part.

In our own country Robinson and Floyd (8) were among the first to question the advisability of drainage in these cases. To quote: "While the removal of such fluid does not infrequently hasten death, its retention has reduced fever, diminished the quantity of sputum and



lessened toxic absorption. A general improvement in the patient's condition has frequently followed."

To sum up it would appear that despite the unanimity of the text book advice as to the advisability of promptly draining all pleuritic exudates, the facts are against it.

I haven't even considered the medicinal treatment which is also unanimously recommended in our text books for certainly if it is unwise to drain these exudates there is no excuse for over-working the poor patients urinary organs or purging him till he is prostrated in an effort to get rid of a condition that is really curative for the underlying tuberculosis.

Neither have I spoken of the numerous solutions for injection into the pleural cavity that have been recommended as promoting the absorption of the exudate, or of sero-therapeutic measures, such as injecting under the skin some of the patients own pleural exudate. I do not take these into consideration for the very good reason that in most cases I do not wish to get rid of the exudate or at least of the lung collapse produced by the exudate.

Coming to the treatment we have used for some years; we first start on the assumption that every case of pleurisy with effusion is tuberculous in origin unless we can demonstrate positively another cause. Lord (9) states the facts in a concise way when he says that "treatment should be based on the ascertained fact that three-fourths of all primary cases with effusion are due to tuberculosis and that two fifths of primary cases develop some form of tuberculosis within two to six years."

Musser and Goodman (10) express the same fact in different words they say: "In so much as from 65 to 80 per cent of all cases are discovered to be tuberculous, again it comes plainly to one that in the larger number of cases of pleuritis the treatment must be that of the treatment of a manifestation of tuberculosis."

A case of pleurisy coming to us then we first assume that it is tuberculous and I have proved all cases to be so that we have treated by either staining methods, cultural or animal inoculation. We have of course, had effusions due to other causes, but these were not treated in the manner to be described.

Feeling sure that a case is tuberculous in origin we do not wish to weaken him by purgation or other of the medicinal measures usually advised, but on the contrary we wish to build him up by every means within our power. We also feel that the pleural exudate is only a comparatively harmless symptom of a very grave disease. We may know from a previous examination or suspect from the history that the exudate is masking the physical signs and symptoms of an active tuberculous lesion in the collapsed lung, but occasionally in the so called idiopathic case there is nothing to indicate an active lesion in the lung.

In the latter case we are inclined to simply leave the exudate to slowly absorb using in the meanwhile every method in our power to build up the patient's general condition. If the exudate is so great as to cause pressure symptoms we draw off simply enough to relieve these symptoms. But where we suspect, or know, that the collapsed or partially collapsed lung is really tuberculous we feel that we should prolong this rest that nature has provided, or expressing it in another way, we should continue the splint that has been applied as long as necessary for the cure of the diseased organ.

If we could depend upon the exudate remaining unabsorbed we should probably be inclined to leave it alone despite the fact that the weight of the fluid pressing down on the diaphragm when the patient is in the erect position is considerable, or pressing on the heart and opposite lung when recumbent, it interferences with the rest in bed of the patient.

However, we cannot depend upon the fluid remaining unabsorbed, in fact, it sometimes absorbs with surprising rapidity, so what is more natural than to withdraw the fluid and replace with air or nitrogen which will maintain the lung collapse without the unpleasant effects of the weighty fluid. This is entirely within our control, we can maintain any degree of collapse we wish and for any period of time we care for.

The collapse is maintained a longer or shorter period according to the amount or severity of the underlying tuberculosis. When we feel that the tuberculous lung is healed we allow the lung to expand.

When we have patients where we can keep them under constant observation we often leave the pleural exudate to maintain the collapse, examining the patient frequently and controlling these by fluoroscopic examinations, but at the first sign of decrease in the quantity of fluid air is injected and we continue to inject this till the fluid has presently disappeared, but the lung collapse is maintained by the air.

Of course this treatment is not always practical, for instance, a pleuritic effusion may occur in the pleural cavity of a lung practically unaffected while the opposite lung may show advanced tuberculous trouble. In such a case prompt drainage would probably be the best treatment, for the diseased lung would probably break down under its increased burden if the collapse of the opposite lung was maintained.

#### BIBLIOGRAPHY.

1. Osler: Principles and Practice of Medicine. 1912.
2. Musser & Kelly. Practical Treatment. 1913. Vol. III.
3. Klebs. Tuberculosis. N. Y. & Lond., 1909. n. 636.
4. West, Samuel. Diseases of the Organs of Respiration. London 1909. Vol. II. p. 718.
5. Zur Chirurgie des pneumothorax. Beitrage klin. Chir. XLIX. 1906, p. 68. Tübingen.
6. Achard. Sur L. Insufflation d air sterilise dans les epanchements pleuraux. Soc. Med. des hospitaux. 1903 XX 3 430.
7. Über Pleuritis Wirkung und Behandlung. Verhand. des Congress f. in Med. Wiesbaden. 1911. 276.
8. Robinson. Samuel and Floyd. Cleveland. Arch. Int. Med. April 15. 1912. p. 452.
9. Lord. F. T., Chapter on Pleuritis. Osler's Syst. of Mod. Med. Vol. III. 1907.
10. Muesser & Goodman. Musser & Kelly's Treatment. 1913. Vol. III. p. 225.

## A GUNSHOT WOUND OF THE ABDOMEN\*

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BY JAMES VANCE, M. D.,

EL PASO, TEXAS.

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This case is reported because the watchful waiting treatment of gunshot wounds of the abdomen has gained many supporters. This is especially the case since the reports of gunshot wounds of the abdomen treated expectantly, during and since the Turko-Balkan war. It is true that the advocates of this plan of treatment have considered military wounds, but there is a tendency to conclude that this method of treatment is permissible or even advisable in abdominal wounds in civil life. The present case helps to illustrate, and surgical sense tells us that the non-operative treatment of gunshot wounds of the abdomen in civil life, at least, is not only foolish but criminal.

The best excuse for not operating on soldiers shot through the abdomen is that they can not be properly cared for. Generally there are neither enough surgeons to operate nor are there the proper facilities for operating on them. Further, in military surgery soldiers are usually brought into base hospitals too late for good chances by operative treatment. In civil life these difficulties rarely exist, so there is no excuse for not operating on all such cases at the earliest possible moment.

It is interesting to note that already the surgeons on both sides of the great war now raging in Europe, are challenging this non-interference plan of treating these wounds. We notice that several German surgeons are strong advocates of opening the abdomen in all of these cases where practicable; stating that their results are much better. From the French we have the first evidence of a careful study of the question presented by Quénu (Medical Record, March 11th, 1916). By the expectant plan of treatment Quénu found the mortality 80 per cent in 375 cases collected from three different sources. In 62 cases personally studied by Quénu, he found that 25 had no perforation of the intestine and in three others the colon alone was perforated extraperitoneally. All of these cases were sent into the base hospital diagnosed as "perforating" or "transfixing" wounds of the abdomen, yet in 28 or nearly 50 per cent of this series the intestine was not perforated, so that close to 50 per cent might well have recovered without operation. No wonder then that different series of cases



treated on the expectant plan give a mortality all the way from 54 per cent to 100 per cent.

**Report of Case.** On the afternoon of March 14th, 1916, a white boy of 14 was shot in the abdomen with a 32 caliber revolver. The bullet entered the abdomen just to the right of and below the navel. The boy was given a hypodermic of morphine just after the accident. The abdomen was opened just a little more than an hour after the accident. He was on the operating table when we first saw him, and he showed little shock; had no pain, and did not appear to be badly hurt. It might have been a tempting case to treat expectantly so far as appearances went.

When the abdomen was opened it was found full of blood which poured from the wound so profusely that we feared a fatal hemorrhage. Symptoms of shock developed at once, but the abdomen was rapidly sponged dry and a large mesenteric artery, that had been cut by the bullet, was ligated. The bullet had just missed the lower border of the stomach and nearly severed the jejunum at a point four or five inches below the stomach. It there passed backward making a long rent in the mesentery near its root and then passed through the jejunum about four inches from its origin.

The bowel was distended with food taken only about two hours before the injury. A large quantity of the bowel contents had escaped into the abdomen. All wounds were sutured with catgut and linen. The two perforations near the origin of the jejunum were most difficult to handle because of the inaccessibility of the gut which could not be drawn forward and because of the severe hemorrhage from the wound of the bullet, as it perforated the peritoneum behind.

From hemorrhage and the necessary handling of the engorged intestines to make sure there were no other perforations, the boy showed considerable shock on leaving the table. The abdomen was closed with a drain.

When put to bed the patient quickly rallied and made an easy recovery in spite of the fact that for 24 hours the urine contained so much blood that it clotted. Blood did not entirely disappear from the urine for a week.

This case is of interest because of an easy recovery after a severe injury and an enormous loss of blood. Recovery was due to early operation.

The bullet, lodged in the muscles of the back, is nicely shown and located by the roentgenograms taken by Dr. Cathcart. This will not be disturbed unless it should cause trouble.

This case serves to remind us that:

(1). All gunshot wounds of the abdomen should be opened at the earliest moment possible.

(2). If there are no intestinal perforations, opening the abdomen will do no harm, and if there are perforations the patient is given the best chance of recovery.

(3). Military wounds of the abdomen are to be treated expectantly only when they can not be treated otherwise.

(4). If the truth could be known it is probable that perforation of the intestine without laparotomy is attended by close to 100 per cent mortality.



*Localization Method Used in Case by John W. Cathcart, M. D.*

The following method of localization was used; no originality is claimed as it is but a slight modification of methods in general use. It has proved to be very accurate and much more reliable than stereoscopic plates, and has the additional advantage that a complicated apparatus is not required.

Plate I is first taken, or the subject fluoroscoped, to determine the presence of a foreign body.

Plate II is then made in the following manner. The tube is placed immediately over the foreign body at a distance of twenty-four inches from the plate, an exposure is then made and the tube moved an arbitrary distance, say 4 inches and a second exposure made on the same plate without having moved plate or patient. This gives two images of the foreign body the distance between which forms one side of the lower triangle.

You then have two similar triangles which are to each other as their bases;

$$a : 4'' :: x : 24-x.$$

$$a=35/100 \text{ distance between bullet shadows.}$$

$$35/100 : 4'' :: x : 24-x.$$

$$x=1.93 \text{ inches distance of bullet from plate.}$$

$a=118/100$  distance between nail shadow, nail placed over marked point on abdomen.

$$118/100 : 4'' :: x : 24-x.$$

$$x=5.47 \text{ inches. Distance of nail from plate.}$$

$5.47''-1.93''=3.54''$ . Distance of bullet from anterior abdominal wall.

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# Southwestern Medicine

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VOL. I.

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## EDITORIAL.

In our first issue a number of inexcusable errors occurred. One of the cuts in the article by Doctor Watkins was up-side-down and a cut that should have accompanied the article by Doctor Vance was made to appear as being a part of Doctor Watkins' article. An advertisement was placed in the body of the magazine among the reading pages. The Editor-in-Chief assumes full responsibility for the errors. In our anxiety to get the first number out and into the mails we accepted some one else's "O. K." to save time, with the result as above mentioned. A more careful survey of the make-up will be given in the future and such unpardonable errors eliminated.

Just here the Editor-in-Chief desires to call the attention of the secretaries of the various county societies to the necessity of having material for publication in the hands of the associate editors in ample time for publication each month. The many details of the new Journal have demanded time in their adjustment and have made delays impossible. In the future these delays should not occur, and material for publication must be on time to find place in the issue each month. The associate editors have been asked to have their copy in the hands of the Editor-in-Chief not later than the 28th of the month preceding the issue. With this date in mind the secretaries should act accordingly.

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## FOCAL INFECTION AS A POSSIBLE CAUSE OF EXOPHTHALMIC GOITRE.

The true etiological explanation of the hypertrophy and over-activity of the thyroid gland accompanied by the triad symptoms of exophthalmic goitre yet remains obscure.

Clinical evidence is gradually accumulating that both hyper- as well as hypo-thyroidism is the result of bacterial, or amoebic infection or sudden excessive metabolism.

The endocrine group of glands—Sajous' "adrenal system"—Eppinger, Falta and Rudinger's "chromaffin" system, consisting of the thyroid,

pituitary and adrenals play an important part with the general protective mechanism of the body.

Careful clinical observation of long standing, moderately virulent infections, such as chronic bronchitis, pulmonary tuberculosis with long-existing abscess cavities, follicular tonsilitis, sinusitis, pyorrhoea alveolaris, intestinal amoeba, fairly severe, will demonstrate an amazing number of patients having hypertrophy of the thyroid glands.

Goitre Commissions have elicited the fact that if the water in endemic goitrous districts be boiled, animals experimented on with it will not develop goitre. Those given the same water, unboiled, will shortly develop goitre symptoms. Boiled water contaminated with the feces from one who has developed goitre will produce the disease in goats, while the filtered residue of water from districts in which goitre prevailed produced the same result in man and goats, namely, goitre.

This leads the student to infer that the water must contain some infectious product, filterable and destroyable by heat, one of the amoeba being most likely.

Walkerton (Amer. Med., Dec., 1916) proves to his own satisfaction that amoebic infection is the cause of goitre. Having in his cases eliminated the amoeba from the system, the enlarged thyroid returned to normal.

Also goitrous, sterile women, after the same treatment, become pregnant.

For twenty years he studied the disease in his own district, where it is endemic. He found it even in the fish in two small streams, and mothers gave birth to goitrous babies, which set him to thinking that a damaged placenta might allow some infective agent to filter through and infect the foetus.

There was the theory of lime in the water, but only certain residents were affected. As to lime, the disease is endemic in other Ontario districts where only granite is.

When he first came he was interested in breeding dogs, but the fine, imported ones gave place to goitrous stock in two or three removes. A whole litter would prove goitrous. Imported cows, horses, pigs, would suffer the same way.

He made a microscopic examination of the alvine secretions of animals and humans, and found amoebae in all.

Amoebae are present in drinking water; but, he asks, are they the same?

His father settled as a doctor in Walkerton fifty years ago. Among the first settlers, goitre was very uncommon. The next generation—whole families—showed thyroidism and he has now a wide-spread amoebic infection regarded as pathogenic. The third generation are often goitrous scrubs, without vitality, virility or ambition.

In ancient times, Pliny, in his NATURAL HISTORY, (XI, 68) observes: "Only men and swine are subject to swellings in the throat, which



are mainly caused by the noxious quality of the water they drink." Juvenal (XIII, 162) says: "Who wonders at goitre in the Alps?"

Paracelsus, in the sixteenth century, found goitre to be endemic in the Salzburg district, and attributed it to metallic constituents in the water.

Excessive fatigue, fright, mental strain, each produce toxic processes through rapid tissue waste and have been observed to promptly develop exophthalmic goitre in both man and animals.

Rothasker reports thyroid symptoms going on to exophthalmic goitre in healthy soldiers subjected to physical and psychic overstrain in the present war and in the Boer war, while the same has been seen in amateur mountain climbers, and horses excessively galloped.

With regard to intestinal infection, McCarrison believes the toxic factor is infection from the gastro-intestinal tract. He has been able to cause complete disappearance of goitre by using vaccines prepared from normal organisms in the bowel.

His hypothesis is supported by Arbuthnot Lane, who believes that goitre, both simple and toxic, can be cured by short-circuiting the large bowel. Pathogenic bacteria induce excessive activity of the thyroid. An important function of the gland is, by its internal secretions, to neutralize circulating toxins, so, as Lane points out, continued stimulation of the gland must result either in exhaustion and atrophy, or adenomatous growths.

He operated for intestinal stasis on a girl who, for eight years, had had an enlarged thyroid which projected forward and hindered respiration. Within a few days after operation, the thyroid steadily diminished in size and became and remains normal.

For the past three years, the writer of this editorial has based his clinical care of five patients, four female, one male, all youthful, each presenting the triad symptoms of Basedow's Disease, upon the removal of markedly diseased tonsils and from these making an autogenous vaccine and with such injecting the patient. The result has been rapid disappearance of all exophthalmic goitre symptoms.

These points, though briefly given, should lead to hesitancy in suggesting surgical intervention upon the thyroid itself until all sources of chronic infection have been eliminated, and from such an autogenous vaccine created and tried.

It is the writer's belief that but a few years will pass until exophthalmic goitre will seldom be directly operated upon.

—*Hugh Crouse.*

## OUR MEDICO-MILITARY RESPONSIBILITY.

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BY

GEO. F. KEENAN, Capt. M. C., Mass. N. G.

(Read before the El Paso County, Texas, Medical Society, Sept. 4, 1916.)

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Brother members of a noble profession: In accepting the invitation to speak here this evening, I have done so with a full realization of my incapability to present so momentous a subject to you in a manner convincing enough, for you to carry away the realization, that sooner or later you must take an active participation in the solution of this important question.

For many months past we have had continually before our minds the question of preparedness. In practically every city of the Union demonstrations by the citizens have shown an awakening to the necessity of some action in order that this great nation shall be adequately prepared to defend itself under any condition that might arise. All classes of men have become imbued more or less sporadically with the desire to take some part in the movement. Business men's classes, Plattsburg excursions, any method that involved the least sacrifice and the least inconvenience.

Members of the medical profession dropped in at the armories, looked us over, and went away wondering why it was that men of our supposed sense would devote so much time and energy to a subject so foreign to our profession.

A slight increase was noted in the men who applied for commissions in the Medical Reserve Corps (inactive list.) At the annual meeting of the Massachusetts Medical Society in June of this year, special arrangements were made for the inspection of Ambulance Companies and Field Hospitals, and though the officers and men were at the armory from 11:00 a. m. to 5:00 p. m., a five minute car ride from the official headquarters, only three of the several thousand members of the society presented themselves to see what we had to demonstrate.

A burst of interest from medical sources was in evidence a few months ago, when the presidents of the American Medical Association, the American Surgical Association, The Congress of American Physicians and Surgeons of North America, and the American College of Surgeons, appointed a Central Committee comprised of practically every famous practitioner in the country at the time. In a letter to the President of the United States, dated April 27, 1916, the following extract is found: "We, the undersigned, acting as a committee on behalf of four national societies representing an aggregate membership of 90,000 medical men, have the honor respectfully to present our greeting, and to tender to the Federal Government our services toward the welfare of the Army and Navy."

Sub-committees were appointed from every State in the Union, totalling three hundred and ninety-eight men. I have been able to verify the presence along the border with the troops, of only three of these men with either the National Guard or Medical Reserve Corps, ordered to active service with the regular Army, and not a single man from my own State of Massachusetts.

The deficiency of medical officers in the regular Army is appalling, and the same condition exists in the National Guard.

Our supply of medical officers at the present consists of the Regular Army Medical Corps, The Medical Reserve Corps, and The Medical Corps of the National Guard. The first group is shorthanded, lacking by several hundred the number necessary to organization, so that practically every unit of the service today has not its necessary quota of medical officers. The Medical Reserve Corps, untrained and not over enthusiastic about being trained, has certainly not covered itself with glory in the present mobilization.

A large percentage of its members are men of eminent standing in their communities, past military age, and with absolutely no intent of entering service unless in command of some large hospital taken over as a Base Hospital by the government during actual warfare.

The younger members of the Reserve Corps, dismayed at the possibility of being ordered to active service and the necessity thereby of leaving lucrative practices and home comforts, have amply demonstrated the success of concerted "wire pulling." The lists of resignations of members of the Medical Reserve Corps, appearing in the daily papers, certainly does not reflect credit upon them as a body or as individuals.

In the National Guard we have not a great deal to boast of in our medical officers, in their tendency to stick by their guns, for the resignations from the Medical Corps far outnumber all other branches of the service, though it is with pride that I state that every one of the thirty-five medical officers accompanying Massachusetts troops to the border is still at his post, although being the first troops here, we had but a very short time to arrange our professional and domestic affairs.

In the *Military Surgeon* of February, 1916, an article appeared on the preparedness of the Medical Department of the United States Army for war. It was stated that every unit was assembled ready for shipment, the only requisite necessary to set the machine in motion being a telegram as soon as mobilization occurred. Of the smaller units prepared were the supplies for recruiting stations and although we were mobilized on the morning of June 20, 1916, and were in camp until June 26, 1916, when orders to move to the border were received, not only were the recruiting units lacking, but even the blanks for physical examinations were not obtainable, seven days after the President's call, and even the stethoscopes used in examining the men were the personal property of the medical officer using them.



Hess in his report of April 16, 1916, reports the deficiency in the National Guard of twenty-eight Field Hospitals, and thirty-eight Ambulance Companies, the more difficult and larger of the sanitary units to maintain, and this deficiency applies only for a National Guard of 125,000. The Fifteenth Militia Division, comprising your own State of Texas, Oklahoma and New Mexico, is short, and must supply three Field Hospitals and four Ambulance Companies, no little undertaking. Furthermore, I have not been able to learn of any completely equipped unit of the medical department on the border today, although some have been here nearly ten weeks.

Insistence on maintaining mule drawn ambulance companies is another instance of lack of progressiveness in the Medical Department. Older army officers still hold to the infallibility of the army mule and its ability to go where the motor cannot; but I am positive in my assertion that a motor ambulance company can in one-third the time transport equal numbers of sick and wounded and present at the termination of its work the same percentage of workable transportation as a mule drawn company.

We face a serious situation, an ease loving people, self pampered and prosperous. We possess the universal short sightedness of Americans as to the dangerous possibility of conquest by invading powers and the consequent destruction of property; the violation of our wives and daughters, the leveling of our institutions, the conditions of bondage, and the subsequent payments of large indemnities on demand of a victorious foe.

It is futile to attempt the creation of a large professional army, for deep seated in our make up is the aversion to the establishment of a large and exclusive military body savoring of caste; this aversion is to be increased by the present European war through the influence of direct and indirect participants. The slogan of a "million men between sunrise and sunset" has been shattered to bits by the lessons of the present mobilization; also gone is the day when we can spring afield armed with the historic pitchfork, for pitchforks cannot combat shells thrown from points eight to twelve miles away, of which we have not the equal. The divergent location and interests of different sections of the country have worked in the past against the development of adequate land and naval forces. The central sections of our country cannot see the necessity of large fleets and in their false security have opposed their development. It is admitted that as a second line behind the fleets must stand a large and well trained and equipped land force. The same forces opposing the developing of these two great units, have also interfered with the interior management of the Army and Navy, so that today they are not qualified to expediently handle a critical situation.

Be not misled by the fact that new regiments are being formed in your midst, for while you may now speak of four regiments where formerly you spoke of but two, remember that your four regiments are at half



strength, where formerly two complete units existed, and that considerable time is necessary to recruit and to train them to efficient organizations.

The obtaining of medical officers for field service is a problem which must be faced without flinching and without reserve. In Germany the most eminent teachers, many of whom we have met, have given up their lives on the battlefields of Europe, side by side with the medico fresh from school. No distinction was made when their call came and they fell into line as designated for the welfare of their country. England, France, and the others followed suit. The number of medical officers necessary for efficient service in the field is conceded to be ten to every one thousand troops. When you consider that we cannot supply the present ratio of three per thousand to the pitiable small number of available troops today, it may stimulate the thought centres, realizing the enormous armies that must be put into the field for defense of this country, remembering that the casualty list of medical officers equal and often surpass those of the line.

In securing officers professionally qualified for the National Guard great difficulty is encountered. Many men who are willing to be known as medical officers of the "Guard" and do not show themselves averse to appearing in uniform at social functions, are active only in movements that do not interfere with their private affairs. The regimental assignments are comparatively easy to fill compared with those to ambulance companies and field hospitals. The enormous amount of work necessary to develop and maintain one of these units does not appeal to the average physician.

The giving up of his spare time and money as represented by three nights, and an afternoon weekly, besides the time called for in his service schools does not strike him as good medicine, with the result that his resignation is soon tendered. Absence from routine sessions soon reduces his value to his organization and his commanding officer is glad to see him go.

Accustomed to being his own boss with an income far in excess of what the military can possibly offer him, used to luxuries as we all are, it is not to be wondered at, that the average doctor finds himself unable to adapt himself to the discipline and rigors of field service except in rare cases. Orders taken from a superior younger and perhaps less prosperous, gall the newcomer; the early reveille, cold water shaving and bathing, coarse food, wholesome and well cooked, yet not daintily served, the absence of the morning newspaper, ants, flies, toads, tarantulas, and occasionally a rattler for bedfellows, do not tend to convince him that patriotism requires such a transition from comfortable home, family and good income, with the result that he is done with the soldier game. Dirt, sand, and a good sweat, combined with saddle sores, prove to him that the most prudent policy is to let the other fellow do it. Gentlemen, twenty years of service on land and sea, in the war with Spain, in strike, riot, and extensive conflagration, have made me wonder if the red blood of America was turning pale.

The scoffings at, and ridicule of sincere men in Massachusetts, by selfish individuals, have many times embittered me in my military efforts, especially when I so well remember when the war with Spain was imminent eighteen years ago, the frantic demands of these same parties for naval protection, and the alacrity with which they removed their worldly goods and cash to points forty miles inland from Boston.

The one solution, medical men of El Paso County, is apparent, that is, universal and compulsory military service for all men, of all classes, of military age, without fee or favor. Our voluntary system of service is a farcical failure and has always so shown itself when the exigency presented. Income, home affairs, and personal ambition must be set aside for the national welfare, and it is among you and your successors that the sacrifice must be made.

There are two methods of raising armies—one by voluntary enlistment, the other by universal training and service. The voluntary system is enormously costly both in men and money, and is attended with innumerable evils. It is a simple matter to get men to offer their services during the excitement of the outbreak of war, but this enthusiasm soon subsides, and then it becomes necessary to offer all kinds of inducements. Under the voluntary system the government goes before the people as a suppliant, because it has put a premium on selfishness and shirking instead of treating them all alike. Voluntarism is the most plutocratic military system yet devised.

It is important to remember that compulsory service is the only method yet devised by which a nation can put forth its entire military strength in time of war. Such a system does away with the professional army, which is a thing of the past, and makes every able bodied male prepare to defend his country in time of need. Under this system the army becomes thoroughly democratic and popular and forms one of the national institutions instead of being a thing, a caste, apart from the rest of the people.

A valuable effect of military training is that it awakens in the hearts of all who participate in it an appreciation of their obligation to the nation in war as well as in peace. It tends to improve their physical condition, their economical efficiency, to instill habits of regularity, thoroughness and promptness. It goes to make all around better citizens, and when men are thrown together, shoulder to shoulder doing the same thing, living under the same conditions, actuated by a common impulse—and that purposes the better to prepare themselves to discharge their duties under all conditions, whether of peace or war—you have one of the strongest influences of a national solidarity.

At this time, when most clear-headed men, both in civil and military life, recognize the fact that the question of obligatory military training seems to admit of only one rational solution, is it not in order to ask: Why should doctors be exempt from the same service to the state? We believe that our profession in its affirmative answer would not hesitate for a

moment. In any humanitarian or other cause in the relief of suffering, doctors as a class are self-sacrificing beyond all others; they are foremost in civic patriotism with an esprit de corps which needs only to be directed into proper channels.

In all our wars civilian surgeons have been prompt to offer their services and to make any sacrifices, but unfortunately, they are slow to recognize their limitations.

It is difficult for the most eminent and accomplished practitioner to understand the difference from a military standpoint between a surgeon in civil life who is an operator, and a surgeon in military life who must be an organizer as well as an operator.

The civilian doctor needs to be trained, like the fighting man, to think along the military lines. He is not readily amenable to discipline and is impatient of "paper work." Things that are known to be of vital importance to the army surgeon he is apt to regard as unimportant. While patriotic and trained to place duty before convenience, unless he really likes them, the maneuver camp and medico-military problem seem to him irksome, it looks too much like playing soldier.

Even in the Medical Reserve Corps, which ought to set an example, as yet only about one-third of the members can lay any claim to even superficial training. We have heard the former Chief of Staff's opinion that "our voluntary system has always been rotten," and we must confess that the part our profession has played has not had a sweet savor in the past.

The remedy is simple. If a physician is indifferent with regard to his duty to the nation which protects him, make him alive to it. In short, we must have the same system which prevails in all the armies of the European continent, the value of which has been so clearly demonstrated in the past year and a half.

Let us begin now by impressing on the entire profession the importance of their duty to fit themselves in time of peace for active service, not to look forward in quiescence and inactivity to political appointments and positions for which they are absolutely unfitted, no matter how capable they may be in functions relating to civil life. A willingness to occupy official place among the defenders of country carries with it an obligation to prepare, so as to carry on effectively the technical duties necessarily pertaining to such place. The best and highest patriotism expresses itself in that inconspicuous service in advance towards preparedness which alone ensures success.

Merely to volunteer in time of war may only be a reflection of national fear and hysteria. Untrained, though willing workers, will paralyze where they hoped to quicken. Successful war in modern days is waged by human machines, not by aggregations of human units not fitted to the general plan. The greater the army needed, the greater will be the need of medical co-ordination and the greater the difficulty of accomplishment. We ought to have ready not two, but a dozen thousand medical men, who when they

don the khaki can adapt themselves quickly and easily and effectively to their new sphere of action, because before the need came they had learned what to do. This is "Not a theory, but a condition." Abroad the doctors were ready. They had mobilized with marvelous rapidity, passing from the laboratory and lecture room to the stern duties of war without an hour's delay.

Can we do the same?

The foregoing is indeed a rather sad commentary on the degree of our medical unpreparedness. Lessons dearly bought by grief and suffering are ignored and forgotten, by a careless, forgetful, egotistical, over prosperous public. We must realize that adequate medical preparedness to care for the nation's defenders by land and sea will come only through pressure of public sentiment, it is equally and obviously sure that such public sentiment will not be developed unless by a medical profession, clear of vision, jealous of repute, willing to deprive itself of luxuries and home comforts, and its action marked by immovable decision.

Gentlemen, you are citizens of the United States with all that sacred obligation implies. What consideration is it to get from you?



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THE INFECTIOUSNESS OF TUBERCULOSIS.

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BY

GERALD B. WEBB, M. D., Colorado Springs, Colo.

(Read at Albuquerque Sectional Conference on Tuberculosis, in Joint Session with the New Mexico Medical Society, Albuquerque, New Mexico, October 12, 1916.)

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Regarding mankind it may be at once stated that human beings can no more escape tubercle infection than they can escape measles, and both diseases are infectious as a rule only in childhood. Given the opportunity of exposure, infection is almost bound to follow.

For some diseases there would seem to be a natural immunity possessed by a fair percentage of people. For instance, it is computed that nearly seventy per cent. of children have a natural immunity against diphtheria. The experiences in the recent epidemic in the Eastern states in infantile paralysis suggests that a similar percentage of children may have natural immunity to this disease and so do not become victims.

With measles and with tuberculosis, however, there are probably not two per cent. of children who by their inherent immunity can escape these infections.

In the case of measles the infection leads to the disease, which may be mild or severe. In tubercle infection of children, however, easily recognizable disease does not follow in the large percentage of the infected. It has been abundantly proved by clinical observation and by animal experimentation that the tubercle bacilli may remain practically harmless in the infected host.

Post mortem records and tuberculin tests show that in large cities over ninety per cent. of children are infected with the tubercle bacillus by the age of fifteen.

This infection of children by the tubercle bacillus we now understand as nature's crude method of vaccination against the disease, for we can now assert that through this childhood infection most adults are rendered immune to tuberculosis.

Just as with measles, so again with tuberculosis, the longer a community of people has been in contact with the disease the less the mortality to be found in that community from that disease.

We must remember that in the crude vaccinating process of our children by nature (or civilization), eighty per cent. of the children who by chance become infected before they are one year old will die, while ten to twenty per cent. of those infected after two years of age also are killed.

Tuberculosis of the spine has been observed in Egyptian mummies of

the periods 2,000 and 3,500 B. C. In modern Egypt tuberculosis was unknown. It has reappeared in Egypt and in Palestine within the memory of physicians practicing there. This has been attributed to the introduction of infected Russian pilgrims and to the return of native emigrants from America. It would seem therefore, that these races might have at one time rid themselves of the disease but are now again vulnerable.

In spite of the large amount of research work that has been done on tuberculous infection we are still somewhat in the dark as to how this infection takes place.

It is certain that children can become infected by either the bovine form of tubercle bacillus or by the human variety.

It has been estimated that about eight per cent. of samples of milk from dairies will contain living and virulent bovine tubercle bacilli. Pathologists believe that infection from such sources will lead especially to types of surgical tuberculosis, that is, tuberculosis of bones, joints and lymph nodes. However, all such types of tuberculosis cannot be attributed to the bovine variety of bacillus.

Pathological anatomists find that in ninety-five per cent. of children who have a tuberculous lesion, this lesion will be found in the lungs and bronchial lymph nodes and is then always caused by the human type of bacillus.

Whether this infection reaches the lungs by the respiratory or digestive tract is still disputed, but the general opinion is that direct inhalation of the human type of bacillus produces such infection.

The fact that in probably all other diseases of the chest infection takes place by the respiratory route would seem to add weight to such a conclusion. In tuberculosis of hogs, on the other hand, infection takes place by the digestive route.

To return again to the early infection of children by the tubercle bacillus, the author believes that symptoms resulting from such infection can frequently be present, yet overlooked.

A slight bronchial cough persisting several weeks, lack of gain in weight, nervous manifestations, slight daily rise in temperature, persistent increase in pulse rate, stomach disturbances, and so on, may be signs indicative of infection. These signs, however, usually do not suffice to enable a diagnosis of tubercle activity to be made.

The application of the complement fixation test would promise to reveal infection in these children possibly before the occurrence of tuberculin hypersensitiveness.

The infection of tubercle has been aptly compared to that of syphilis. It is known that a syphilitic person is immune against reinfection from without, but the disease can spread within the body from the early infected lymph nodes and so eventually bring a fatal ending.

It has been said that "only a tuberculous animal is immune to tuberculosis;" just so, only a tubercle infected child is immune to tuberculosis.

The life history of the parasite of tuberculosis demands that there be access to and egress from the host. As we know, many parasites have enlisted the aid of insects to transfer them from one host to another. The tubercle bacillus for its own ends probably taught man to be a "spitting animal."

The human type of bacillus is "tuned" for the lungs, infection by it of other organs of our bodies is probably accidental.

It is difficult to understand the part of the life history of this parasite which requires childhood infection and yet does not bring about the expectoration so necessary for its propagation until adult age of the host is reached.

In pregnant consumptive women we find the tuberculous process often remarkably held in abeyance until after parturition. It may be that a similar hypernutrition of the growing child can hold in abeyance the tubercle bacillus. It certainly seems paradoxical that during the years that most infections take place the death rate from tuberculosis is lowest.

The work of Flugge on droplet infection suggests that the greatest dangers of infection come from tubercle bacilli contained in droplets emanating from spitting, coughing or even talking consumptives. One has only to cough or speak in front of a mirror to see the numerous droplets of moisture collected on the mirror's surface. It has been experimentally proven that such droplets from a consumptive can contain virulent tubercle bacilli, yet the numbers of these bacilli would be very few in comparison with the millions which are to be found in the lumps of sputa. The idea of infection occurring from such droplets would seem to be confirmed by animal experimentation. A dozen bacilli, if virulent enough, can produce infection which would be of a more benign type than that caused by the introduction of millions. Should such large numbers be introduced we would be more apt to expect a rapid disease.

Experiments conducted with dust collected from the houses and rooms occupied by consumptives show that animals cannot as frequently as might be expected, be infected and made tuberculous by injections of such material.

When cattle placed in contact with cows called "reactors"—animals reacting to tuberculin, yet having no open tuberculous disease—can become infected with tuberculosis, it would seem, according to Romer that there may be other modes of infection which are not yet understood. Distaso has recently shown by interesting experiments that guinea pigs can be infected by contact with tuberculous guinea pigs and that the route is probably through the nose.

The usual source of infection in the human race is undoubtedly the consumptive, and Hamburger states that it may only be necessary for a child to come once in contact with a consumptive to become infected.

One of the results of sanatorium treatment for consumption has been to convert patients who would otherwise die of tuberculosis, into chronic



cases or "carriers" of this disease, so we must expect more and more infections in children. There has been also generally a reduction in adults of the morbidity of this disease.

The number of deaths from tuberculosis, which in childhood exceeds those from all the so-called children's diseases, has not appreciably diminished during the last thirty years, according to Bandelier.

The infectiousness of tuberculosis was early suspected. It is narrated that Valsalva and his pupil Morgagni were afraid to dissect the bodies of consumptives. Morgagni in 1760 was one of the first pathologists to describe the little lump or tubercle which characterizes the disease tuberculosis. It was Morgagni, too, who said that observations in disease should be weighed and not counted.

Laennec, the inventor of the stethoscope, thought he had infected himself with tuberculosis when conducting an autopsy on a consumptive.

When visiting the Keats Memorial in Rome some years ago, the author learned that this dying consumptive poet had brought great fear of contagion to the Italians. Food and necessities were delivered to him by the inhabitants through the windows and Keats was subjected to the ostracism which it is to be feared has been recurring in this country in the present generation.

At the end of the eighteenth century it was required in Italy that all the bedding and clothes of consumptives be burned.

The experimental proof of the infectiveness of tuberculosis was first produced in a rabbit by Klencke. Later Villemin, who so recently died, infected animals with sputum and with caseous material.

It is accepted that primary infection takes place easily. Re-infection with tuberculosis is either by the spread of the disease from the infected lymph nodes, called endogenous, or else from new inhalations of bacilli called exogenous.

It is recognized in animal infection that the bacilli of a reinfection may not be destroyed, but may remain latent at the site of inoculation. Hamburger states that exogenous reinfection by inhalation occurs frequently, especially in individuals who are constantly associated with consumptives. He states also that many develop an immunity to exogenous infection, while for many it is very dangerous.

The latter statement would seem to be contrary to the experience of physicians and nurses who have cared for the consumptive sick, for in all countries it has been notorious for years how rarely such an attendant develops the disease.

In lectures I have given nurses over many years, I have always emphasized this point. I have insisted that a person who has, for instance, typhoid fever, cannot then get typhoid from another victim. Similarly, I have pointed out that these nurses have already resisted slight infections and are therefore immune to reinfection.



The campaign against tuberculosis the world over has resulted in the development of an unnecessary fear by adults of the unfortunate consumptive. This fear, termed phthisiophobia, has resulted in almost a persecution and ostracism of the consumptive, similar to that I have referred to regarding poor Keats.

Your distinguished student of tuberculosis, Col. Bushnell of Fort Bayard, has for some years earnestly contended against this attitude. Fishberg in his excellent new book "Pulmonary Tuberculosis," eloquently takes the same stand.

Our renowned President, Dr. E. R. Baldwin, has again and again emphasized the injustice that is being done to the unfortunate victims of pulmonary tuberculosis. It is very necessary that the public be taught that it is almost impossible for this disease to be contracted in adult life from outside infection.

On the other hand it must be emphasized more and more that children must be better protected from the consumptive, especially during the first few years of life.

Examination of school children must also be insisted on so that those children who indicate more tuberculous infection than protection can have their general health improved by better hygiene and more outdoor living.

The world is daily expecting the discovery of a method of vaccination against tuberculosis. It would seem to be necessary in order to produce any immunity to imitate nature and to produce in a child a localized infection from which disease could not proceed. This may yet be possible of achievement, and its discovery will prove one of the greatest triumphs of modern medicine.

In the meantime the death rate from this disease is gradually falling, not so much because of the campaign against it, but because of the more thorough tuberculization of all races.

By creating more carriers of disease there can be little doubt that for the time being we are playing into the hands of the parasite, for the tubercle bacillus desires an increase of colonies and does not desire destruction of the host.

The dangers brought about by the increase of the carriers or of those who can spread infection, will in time be offset by the increase in protection gained by such infection.

To take advantage, in conclusion, of the knowledge we have gained in regard to the infectiousness of tuberculosis, we must demand, (1) that all consumptives should shield their mouths when coughing, especially in the presence of children, and that their expectoration shall be properly destroyed.

(2) That all young children, especially infants, be removed from contact with the spitting consumptive.

(3) That the general public be reassured that there can be no danger to them from ordinary contact with the consumptive.

(4) That school children in all communities should have the services of school physicians whose duty should be to see that children who are below par and who would seem to be candidates for active disease should be cared for and placed in open air pavilions until such dangers are passed. To stamp out consumption in adults we must begin with the child.

(5) That in all cities open air pavilions or so-called preventoriums, such as at present exist in a few, be built, where such children can be properly cared for.

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#### DISCUSSION.

**Dr. David C. Twitchell, Albuquerque:**—I think that we all feel extremely indebted to Dr. Webb for this very important and interesting paper. He has brought up many points for discussion, many interesting and important points.

There occurs to me an instance, which I saw myself, of native infection, to which the Doctor refers as occurring in Egypt and Assyria in these latter years when there was undoubtedly an early immunity there. In the island of Bermuda, which is only 300 miles from New York City, for many years, up to the last ten years, there was very little tuberculosis among the native population, very little. In fact, they seemed to be quite free from tuberculosis. But in the last ten years it has become more and more popular there with the young negroes to go up to New York City to work in the restaurants and hotels, etc., and many of them contract tuberculosis and then return to Bermuda and spread it among their families, until today in those small islands the tuberculosis problem among the negroes is a very serious one indeed.

But to take up the matter under discussion: I will touch on only one point. I might say, first, that like many other questions in tuberculosis, it would seem surprising that after so many years of very intensive work there are yet so many questions in regard to this serious malady which are yet unsatisfactorily explained. This fundamental question of infection, which certainly is the basis of all our campaign against this disease in the way of prevention, is yet, I daresay, an unsettled question. We have all of us seen the emphasis change from adult infection to infection in infancy and childhood, and this is the present phase of the matter that holds our attention. But I think we all ought to bear closely in mind that this is largely a theoretical consideration, and that the question is not settled. Certainly, we should not relax our efforts at protecting the adult from infection because at present the emphasis is on infant and childhood infection.

It is well to keep in mind the other possibilities in this unsettled question of infection and not become fixed in our minds, especially when we are considering the question of research work. After all the research work and investigation that has been made on this question of infection, I think the outstanding points that are settled upon are the infecting agent, the tubercle bacillus, but as to the manner of infection and channels of infection I feel that the matter is yet very decidedly unsettled.

In conclusion, I would say that from a practical standpoint of our knowledge of the tubercle bacillus as an infecting agent, it would seem to me from my experience in the management of cases and study of the problem that the two practically important things are the extension of the principle of fresh air schools and the care of children, as Dr. Webb has pointed out; and in the second place a more careful campaign, particularly by the practising physicians, of education that would lead to the destruction of the tubercle bacillus in the home, because I believe that tuberculosis is largely a house and home disease and it is only by the education of the consumptive himself or herself that this destruction of the tubercle bacillus in the home can be carried out. Thank you. (Applause.)

**Dr. Robert B. Homan, El Paso, Texas:**—I have greatly enjoyed Dr. Webb's excellent paper. The Doctor has done quite a deal of original work and an immense amount of study along this line, and any expression from him upon the infectiousness of tuberculosis we should accept largely as authority. That is very little that I could add to it.

Certainly, in the past, we have neglected our work among the children in the prevention of tuberculosis and it devolves upon us, as medical men, in the future to put more time and study upon the methods of work among school children, especially

in the prevention of tuberculosis. Just now many of our states are adopting laws of enforced education, and right here we should put in a word of caution, for forcing children to attend school who are really tuberculous is not desirable, and in states where these laws are proposed, our medical men should see that some method is used for the exemption of children with tuberculosis. They should not be allowed, at least not forced, to go into our public schools.

Now while we recognize the importance of this preventive work among children, I agree with Dr. Twitchell that we must not allow the pendulum to swing too far in one direction. Those of us who are doing tuberculosis work realize the frequency with which we encounter consorts who have undoubtedly contracted tuberculosis from the other member of the family. We also come in contact with adult infection in other ways. For instance, a bank clerk goes to a bank where someone has died of tuberculosis, perhaps using the same books, working with the same things. Soon he contracts tuberculosis. Then it is not long until there is another case from the same institution. We must recognize from these cases that adults do contract, frequently, tuberculosis from each other, and while we appreciate the importance of the work among the children, we must not let it lead us away from the fact that there is still danger of adults contracting the disease from adults. (Applause.)

**Dr. J. Metzger, Tucson, Arizona:**—All the work that I have been able to do in tuberculosis has been of purely clinical nature, and I therefore do not feel qualified to intelligently discuss a paper of this nature. However, I do enjoy and appreciate the good paper and the excellence of everything coming from Dr. Webb, which I think warranted us in our anticipations of real quality.

My belief is that the theory of childhood infection is much more tenable than the theory of infection by the respiratory tract. The arguments seem to me much more conclusive. The community experiment, now being done by Dr. White, of Pittsburg, about which Dr. Jacobs told me the other day, certainly should throw some light upon this problem of the infectiousness of tuberculosis. Likewise the community experiment which is to be undertaken under the National Association for the Study and Prevention of Tuberculosis, financed by the Metropolitan Life Insurance Company, should throw some light upon the problem. I think the results of these experiments certainly will be looked forward to with a great deal of anticipation.

The essayist referred to a certain hospital in the period before 1882 and the period after that date. I happen to have the figures at my fingers' ends here, and I will give them to you. In 36 years prior to 1882, among 154 medical men who were connected with this hospital, there were 51 per cent. who contracted tuberculosis. After the discovery of the tubercule bacilli, in 27 subsequent years, among 309 people who were connected with the hospital, in other capacities, however, than as physicians, there were 32 per cent. only who contracted the disease. However, it seems to me that if infection by contact does not occupy the place that we have in the past believed it occupies, there is not enough disparity in the figures. I believe the decrease should be much more than 19 per cent. I thank you. (Applause.)

**Dr. A. M. Forster, Colorado Springs:**—When I was in medical school I remember that whenever the quizzmaster asked us what we would do in a certain case, that if we were puzzled we would say we would let nature take its course; and I think that is a very good principle for us to follow in connection with this tuberculosis problem, if we can find out just what the forces of nature are doing and how she is doing these things, that we may steer our course more clearly.

It is a fact that the death rate from tuberculosis has been dropping in the last generation, very perceptibly dropping, and there has been a campaign against tuberculosis, an organized campaign, for the past fifteen years. Yet up to now there has been no perceptible increase in the dropping of the death rate over that of the fifteen years previous to the beginning of the campaign. If we can find out just what forces have been at work during the past generation and direct those forces along the proper channel, we will then possibly be able to increase the rapidity in the drop of the death rate. Dr. Webb brought out that we probably have increased the number of carriers, probably have increased by the work we have done so far the opportunities for infection, and, also, we have diminished the death rate. So that, as I said before, it seems that there is some force which is working, not against the opportunities for infection, but for decrease in the death rate. That force is probably, as has been pointed out a good many times, the improvement in living conditions.

As Dr. Twitchell says, Dr. Lewis has elaborated an ingenious theory in regard to the drop in immunity along at the time of the greatest incidence, the greatest



death rate from tuberculosis, and yet that may not be a complete explanation. As Dr. Webb says, though the child leads the life of civilized surroundings, yet his opportunities for healthful outdoor life are very much greater than those of the young adult, and I feel very firmly that the death rate along between the ages of twenty and forty is not due so much to any peculiarities with regard to the tubercle bacillus or the conditions of the body as it is to the conditions outside of the patient, outside of the animal, the surrounding conditions, which are so radically changed when he goes into the fight of life, in active competition with his fellow beings and under the most adverse economic conditions. (Applause.)

**Dr. J. S. Cipes, Albuquerque:**—I fully agree with Dr. Webb's paper or rather with most of his statements, with the exception of one part of his conclusions. He makes one statement there which seems to minimize the danger of infection from adult to adult. At the same time he gave in his paper the method of transmission, the droplet infection. While it is true that at the present time the general opinion seems to be that tuberculosis is caused only in childhood, or, in other words, it is contracted in infancy and childhood, and not in adult life, yet as long as we know there is droplet infection we must realize that there is a possibility of the tubercle bacilli being transmitted to the child even though no adult has been exposed to it, for we know that the tubercle bacillus will live probably for months or years, if it is not exposed to direct sun rays, and in this way infection would naturally be carried to the home. If an adult is exposed to the tubercle bacillus, the droplet will probably be carried to the home on his clothes, and in this way be transmitted to the child. For this reason I believe that we ought to be a little more careful in saying that the consumptive is not dangerous to the adult, for in this manner he can infect the child, even though it is not direct contact. (Applause.)

**Dr. A. W. Wilson, Prescott, Arizona:**—Dr. Webb's paper has a very close bearing upon the work of the Society which is in session at this place. The whole problem of tuberculosis depends entirely, in my opinion, upon the amount of natural immunity that is developed in the individual. This immunity is, I believe, acquired, as Dr. Webb stated, by nature's vaccination. One means by which we can assist nature is by trying to prevent a massive, overpowering vaccination in childhood, and by aiding the child to acquire the proper vaccination by carrying him through those periods of stress in childhood. There is no one thing that could be more deplorable than to absolutely stamp out the natural means of vaccination in childhood. If we had at the present time an immune, free race, with a certain number of tuberculosis carriers, we would have a type of tuberculosis which would closely resemble tuberculosis in the Indian. Protect the child from massive infection, and carry him through the periods of stress by our outdoor schools and a rational outdoor life. (Applause.)

**Dr. L. S. Peters, Albuquerque:**—I do not feel that we ought to close this discussion without hearing from Colonel Bushnell, who probably was the first man in America to do anything definite along this line. (Applause.)

**Col. Geo. Bushnell, M. D., Fort Bayard, N. M.:**—I am afraid that my close proximity to Dr. Peters might lead you to think that I had something to do with this request. I have not prepared any remarks at all, and as the time is rather short, inasmuch as we were late in starting, I will speak of just one or two items that occurred to me in connection with the remarks of some of the speakers.

One of the speakers, during an argument as to the danger of reinfection, has quoted the fact that cattle do not continue to retain their immunity any longer than the bacillus lives. I do not think that we ought to draw any conclusion from that, because cattle are vaccinated with the human strain. Now how can you tell for sure whether you have bovine tuberculosis or human tuberculosis? What you do is to get a cough, and when the cough is over the effect is ended. In other words, the human strain has very little pathogenicity to cattle. It is very slightly pathogenic, or perhaps not at all in some cases. Therefore, in accordance with the general law that we do not get immunity except from a virulent organism, we cannot expect to get prolonged immunity in cattle to human bacilli.

The question as to reinfection I think is the most important question before the medical world today, barring none; for the reason that the question is at the bottom of so much legislation, so much talk of sanitation. We are either right or wrong in our theories of infection, our fears for the adult. If we are wrong, we are doing a great harm; if we are right, we are not doing very much good, because, as has been stated, the morbidity of tuberculosis is not diminished. The mortality



of tuberculosis has diminished in the last fifteen years, but not the morbidity. There are just as many people who have it as ever; the reason they do not die is on account of the hygienic conditions, not on account of specific treatment or specific sanitation.

The infection of adults is stated, and was stated by one of the speakers, to be proven by such illustrations as the bank clerk who gets tuberculosis because his predecessor had it, or the wife who takes it because her husband had it. Now that does not follow at all. All children have tuberculous infection. Suppose we take that as an assumption, that all children have tuberculous infection and cannot get any more. Then if they get sick of tuberculosis later the reason is that they have lowered their resistance to their own organism. Now people under the same conditions of sanitation are very apt to develop similar diseases, and a dozen people under unhygienic conditions will be very apt to develop tuberculosis one after the other on account of the unhygienic conditions and not on account of infection from one to the other. I think it can also be stated as a pathologic fact that can hardly be disputed that no infection that can be traced in point of time from one person to another will result in chronic pulmonary tuberculosis. I had a case once where a man came in—he happened to be a marine of the Navy—to Fort Bayard with a diagnosis of tuberculosis contracted not in the line of duty. Why not, why not in the line of duty? It was so stated because this man had gone on a three days' hike, and while on the hike he developed a hemoptysis. Therefore, he got his tuberculosis on that three days' hike and not in the line of duty. That is a good example of the infection of tuberculosis in the adult. (Applause.)

**Dr. A. H. Williams, Phoenix, Arizona:**—I think that the danger in Dr. Bushnell's argument is that what he says about the communicability of the disease in the infection of adults not being proven is equally true in regard to Dr. Webb's statement that only children can be infected; and if we are going to err on any side, we should err on the side of regarding tuberculosis as possibly infectious to adults. For that reason it seems to me that Dr. Webb, with his great authority, just as Dr. Baldwin of Saranac, with his authority, are really dangerous to our community today, because they state what is after all only a theory so positively.

To my mind we ought still to regard this question as an open question. When we consider the enormous statistics that were compiled a while ago on house infection—and we cannot throw them away, because we accepted them once, though we have forgotten them—when we consider that after all it is true that an apparently larger proportion of husbands and wives than the hygienic conditions would seem to warrant contract the disease, when you consider that at the Johns Hopkins school it was found that the increase of tuberculosis among their medical students was so severe that they have been obliged to force them to a more hygienic manner of life, requiring them to rest on Saturdays and to take other precautions, when you go back and consider the enormous number of mistakes that Medicine has made, when you consider that men like Koch have had to revise their ideas of tuberculosis; when you consider these things it is impossible to feel that we can accept unreservedly the theory of infection only in childhood. By Dr. Webb's own figures, ten per cent. of the adult population is not immune, because he says that only about ninety per cent. of children are infected; and we have no business to expose that ten per cent. of the adults to infection. (Applause.)

**Dr. Webb, closing:**—It was very kind of you to take so much interest in my efforts, and I greatly appreciate it.

I think perhaps I had better reply to Dr. Williams first, inasmuch as I am labeled as a dangerous animal. Of course, no one realizes more than I do that fashions change in our views of diseases and in tuberculosis very much like the fashions of ladies' clothes and dress, and that we may think one thing one year and another thing another year; but the conclusions that we have come to are not only warranted by the figures, especially the exact figures which Dr. Metzger gave from the hospital, which are very remarkable when you think of it, because before the period when the tubercle bacillus was discovered in eighty-odd, they never used to open the windows. I was brought up in a London hospital, I was brought up with consumptives as a medical student in a London hospital, and I know they never opened the windows there. I was put in the hospital once because they thought I had it. We never had any open windows and there was no other attempt to give the proper hygienic treatment that we give today, and they were in absolute ignorance as to the bacillus and its behavior. So the figures quoted by Dr. Metzger are really very remarkable when you think of it—practically no difference in the number affected in the days before the discovery of the germ, when there was no knowledge of hygiene and no knowl-

edge of the infectiousness of the sputum, and now when every precaution is taken.

Also it has been shown in animal experiments—experiments on sheep, and sheep are more like human beings than other animals—that it is not possible to reinfect sheep with ordinary doses. On the other hand, it is known that if you give a sheep a massive infection then you may produce disease. It is very similar to what we find in smallpox. The disease is not produced by ordinary doses; but if you inject a tube of smallpox virus into the veins of an adult or a child who has been vaccinated, I doubt if he would be more immune. I mean immune in the ordinary sense, that is, from the actual contact and the ordinary chance of infection. I rather think that the figures will bear out the point that Colonel Bushnell and Dr. Baldwin have so well taken.

In regard to the experiments that Dr. Twitchell spoke of as having been made by Paul Lewis, he was one of the pathologists of whom I spoke who disagree with the present conception. I rather agree with Colonel Bushnell that you cannot compare the bovine conditions with the human conditions. Of course, Paul Lewis and Theobald Smith have used the bovine vaccination with the human strain and have followed it up then with the bovine strain. In spite of that, I do not think you can compare them, because I do not think that Dr. Lewis makes it absolutely certain that the germs of childhood have absolutely disappeared. It is known that they may not be absolutely disappeared. He would first have to prove that every infection of childhood is absolutely overcome, that the child is no more sensitive to tuberculin, which we know is not the case. So the child in all probability has these germs for many years. There, too, clinical experience disagrees with Dr. Lewis. We can watch these children with tuberculosis, we have the opportunities in tuberculous families now with our improved methods of X-ray work to watch these children through their lives and we can see more or less the conditions that are going on within the child. So I do not feel that we can really accept Dr. Lewis' conclusions.

In regard to what Dr. Homan has said, I also agree with Colonel Bushnell that there is such a thing as coincidence, and when you speak of the case of the bank clerks coming down, two or three of them from one bank, it is also perfectly true, as Dr. Bushnell says, that under the same conditions similar results will be obtained. There are experiences, too, which lead us to think that there are instances when human beings can be overcome by an overwhelming infection. Then there is the story of an old gentleman who came to his physician and said, "Here, Doc., if this infection is catching, how is it I have not got it from my three wives?" It seems that he had had one wife after another die of tuberculosis. It may be that that gentleman is really a tuberculous Bluebeard and had been the cause of the death of those wives. On the other hand, most of the infections we see under marital conditions are very benign. We must not overlook the change that takes place when men leave college; they give up most or all of their athletics and go into sedentary life, and it is at that time that we get most of the cases of infection.

Dr. Cipes brought up the very important point of the possibility of contact infection from adult to child. I think it is very dangerous, that the consumptive will at times have tubercle bacilli on his hands, and I do not doubt that it can at times get to the child in that way, even though there is no direct contact.

In conclusion, I have attended medical meetings in many parts of the world, but I do not know that I have ever attended a meeting in such a well ventilated room or with so much good fresh air to breathe.

**Dr. W. T. Brown, Watrous, N. M.**—Although the discussion is closed, there is one instance that I would like to be allowed to bring up. One of the large employers of Chicago, employing over 10,000 people, when they took up this tuberculosis problem some five or six years ago, found that in their packing rooms they had a great many cases of tuberculosis. I think they discovered inside of a year something like 30 or 35 cases. They started an investigation into the cause and they rather attributed it to the fact that they were collecting from all over the house the waste paper and that, without being sterilized at all, was simply shredded and used as packing material. They cut out the use of that old refuse paper and for several years have used a first-class quality of clean excelsior and there are now practically no cases of tuberculosis in their packing rooms. The men in those packing rooms were all adults. The conditions of the packing rooms are exactly what they were five years ago, there is no better ventilation or anything else. Now would you think that those people were infected or were they not? They have eliminated tuberculosis in their packing rooms, whereas it was rampant five years ago.

**Dr. Webb (in answer to Dr. Brown):**—I would not quite know how to answer that, unless it was a coincidence, or it is possible that in using that paper there was a great deal of dust, which might not be so much in evidence with the excelsior. I understand this paper was shredded, so that it might give out a great deal of dust and that dust be conveyed to the lungs. That is possible. I have always had the feeling that in the invasion of tuberculosis there might be some forerunner of it, some irritant, an attack of bronchitis, etc., which might open the way.

**Dr. W. T. Brown, Watrous, N. M.:**—If I might mention another case, in a machine shop there was a man at a machine who was in an advanced stage of tuberculosis, worked there in that condition for a long time. He died, and another man was put at that machine and he died of tuberculosis. I think it was something like five men who contracted tuberculosis, and all having worked at this machine. Disinfecting was tried, and finally they tore up the entire floor around that machine and put in a new one, and got rid of the trouble. Those are specific instances.

**Col. Geo. Bushnell, M. D., Fort Bayard, N. M.:**—It seems to me that you cannot draw general conclusions from a few cases of that sort. You have not excluded coincidence, perhaps improved methods of sanitation and hygiene and examination. There are a thousand and one things which might explain that coincidence besides the admission of direct contagion from one to another.

Before we go on with the subject, I would like to express the great pleasure that I have in finding here so many people holding what I consider sane views.



## HELIOOTHERAPY IN THE TREATMENT OF TUBERCULOSIS.

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BYA. G. SHORTLE, M. D., Albuquerque, N. M.

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It was with considerable hesitation that I selected the subject of my talk today, for not only has my experience been short and the number of cases small, but owing to the fact that the treatment has been used almost exclusively in the surgical types of tuberculosis it would be more appropriate for some of my surgeon hearers to discuss this most important treatment.

The best excuse for my assuming to speak on the subject is first, the fact that, short as is my experience, I appear to have been among the first in America to have used solarization in the treatment of tuberculosis. Secondly, I feel that it is time that the treatment of the pulmonary case received more consideration, and with that type I can lay claim to a fair amount of experience.

I shall devote most of my time to a short resume of the literature which is already quite extensive, there having been published about 300 articles on the subject, chiefly by European authors, there being scarcely over a half dozen American contributions. One is impressed by a study of both the American and European articles by the fact that very little scientific work has been done to determine how the beneficial results of the solarization is brought about, in other words the method is still used empirically.

*Historical.*

Like so many therapeutic methods that come to us labeled "new," heliotherapy proves on investigation to be decidedly ancient. A Frenchman with a liking for puns has remarked that it is as old as the sun. Herodotus is said to have described it as early as 450 B. C., and the Romans built solaria on their houses for this purpose. According to Jeanneret, Faure used the sun cure in 1774 and reported some cures. Cousin in 1815 published a work on the subject and Bonnet in 1845 recommended the treatment in tuberculous tumors of the knee. To Rollier of Leysen, however, must be given the credit of first systematizing the treatment and through the publication of his results to a large extent popularizing it. He started with one small building in 1903, and now has accommodation for 700 patients, which in itself speaks for success of the method.

In America Dr. Holden of Denver used the treatment for a short time but abandoned it, his cases being almost exclusively pulmonary tuberculosis. I started to use the method in Albuquerque early in 1912, and



as far as I can learn the sun bath I built in March of that year was the first built in America for the treatment of tuberculous cases.

*Theory of Effects Produced.*

I have stated that the treatment so far has little but an empirical basis, but briefly as possible I will review some of the theories advanced to explain the effects produced by the sun's rays on the human body. A brief review of some of the physical facts governing light emanations should probably preface this. As you all know, what we term color is the effect of light rays of different lengths upon the retina of our eyes. When the sun's ray is dispersed through the spectrum into red, orange, yellow, green, blue, indigo and violet, the red will be found to have the longest ray, the violet the shortest. All light rays have three properties, that of heat production, light production and chemical action, these properties varying with the color, red producing the most heat, yellow the most light, and violet or actinic ray having chiefly a chemical action. Besides these visible rays there are the ultra red and ultra violet rays of the invisible spectrum occurring at each end of the visible spectrum. As a sun ray is practically a bundle of these diverse rays the study of its effects on the body becomes most complex. There is not only the varying action as to heat, light and chemical action, but the factor of penetration, for the different rays vary in their power to penetrate the tissues, the heat wave having the greatest penetration, the violet wave the least.

Finsen attributes the effects of heliotherapy to two causes. (1st.) To the penetration of the ultra violet ray with its power to destroy germs. (2nd.) To the influence of the heat rays which act by producing hyperemia and its accompanying phagocytosis.

Delachaux says: "On the circulatory system the sun acts by vasodilation and regulization of the peripheral circulation."

Rollier states that: "Solar radiation augments the capillary pressure and diminishes the arterial pressure and decongests the internal organs," and according to Dietrich the results of exposing the body for a time to the sun's rays that we can consider as established are: (1st) increased pigmentation, (2nd) increased growth of hair, (3rd) increased metabolism, (4th) increase in number of erythrocytes, (5th) local hyperemia, (6th) decrease in number of respirations, (7th) increase in depth of respirations, (8th) fall of blood pressure and (9th) stimulation of nervous system. However, there appears to be much uncertainty and difference of opinion as to the theory of the action of sunlight, and as Mayet has said, "We still lack the sure experiences of the laboratory; animal experimentation is needed."

The ability of the blood to absorb light energy as proved by Von Schläffer is no doubt a factor in the results, and as a sun bath means, as a rule, an air bath also, it is probable that rapid evaporation of the per-

spiration and better "skin breathing" resulting from exposure to the air alone is not without its effect.

Hallopeau in speaking of the effect on the blood says, "There is an increase in the red globules and in the amount of hemoglobin," but as this is a well known effect of altitude, irrespective of the effects of the sun, the statement does not mean much, in fact, he could have added that there is also an increase in the total count of the whites and an increase in the differential of the lymphocytes, also effects of high altitude.

#### *Results.*

Whatever causes underlie the treatment, it is certain that there is a distinct value in the treatment. Surgeons are constantly visiting Rollier, going in the most skeptical mood and departing enthusiastic advocates of the treatment. When such surgeons as De Quervain, Wittek, Bardenheuer and Leriche, advocates of the surgical procedures, are converted to the medical treatment of surgical cases, it is pretty certain that they do not change their views without thorough investigation. It would be tiresome to read the many enthusiastic published reports.

Besides the surgeons just mentioned, Delachaux, Jeanneret, A. Treves, Vignard, Jouffray, Minnells, Kisch and Gratz, Poncet, A. Hussy, Felten and Slottzenberg, and many others in Europe advocate the treatment. In America the surgeons have scarcely tried the treatment, but Pryor, Hammond, Kime and Campbell have treated a considerable number of cases and report good results so far.

This paper, when published, will include the translation of a statistical chart of Rollier's reporting on 1129 cases treated from 1903 to 1913. These include practically every type and form of tuberculosis.

While a careful analysis of the chart will be left for you to make from the published article, it can be said that roughly he got cures in more than 80% of the closed cases and over 70 % of the open cases, and that 308 of the 371 cured joint cases showed good motion on recovery.

Poncet and Leriche have reported excellent results with heliotherapy in the treatment of the surgical type of tuberculosis, but emphasize that it is of great value in many other conditions such as rebellious ulcers, infected wounds, retardation of reunion of fractures, etc. Tuberculous peritonitis and ileocecal tuberculosis usually do well. Rollier reports the disappearance of large tumors of this region reported inoperable by Roux. Considerable exudates will absorb and pain disappear under treatment.

Spondylitis, coxitis and all forms of bone and joint tuberculosis do particularly well. Lymphnodes also disappear under treatment.

#### *Urinary Tract.*

To those of us who have treated tuberculosis of the urinary tract and appreciate the difficulties, Rollier's results with 22 cases treated between 1903 and 1916 is most encouraging. He says that in all these cases the condition was due to primary renal conditions. In twelve of these tuber-

culin was associated with the solar cure, six were still under treatment and all are progressing very favorably except one. Sixteen had left the clinic, five arrived there nephrectomized with the operative wounds not healed. Four were completely cured for from three to six months and one case for longer.

Amelioration and cure is shown in this class of cases by decreased frequency of micuration, disappearance of pain, pus, blood and bacilli and improvement in the general conditions. The marked diminution in pain noted would alone justify the use of this treatment.

#### *Pulmonary Cases.*

As is usually the case, there is not such consensus of opinion when it comes to the pulmonary case. Rollier says that it has been habitual to decry heliotherapy in the treatment of pulmonary tuberculosis, but that during the nine years of his practice he had had the occasion to observe many pulmonary cases combined with other forms, treated by heliotherapy and he had never a mishap, on the contrary the tuberculous foci were very happily influenced. It is especially children and young pulmonary tuberculous subjects who derive the greatest benefit.

Myers reports an interesting case of hemorrhagic consumption cured by this means and all who have treated pulmonary cases appear to agree that the likelihood of hemorrhage is lessened by the treatment.

Minelle also reported good results in pulmonary cases and gave as contra-indications, fever, hemorrhage, cardiac lesions, nervous dis-equilibrium, chloro-anaemia, tuberculosis. Of the early or symptomatic improvement Felton and Slottenzenberg say: "The healing process in isolated cases is as follows: Great increase in pus secretion for about three weeks, diminished pain after a few days, then adjustment of temperature to normal, a serous secretion which dries up gradually with the healing of the fistulae." The early relief from pain is dwelt on by all observers.

#### *Application of Treatment.*

Rollier has given the following directions for the application of the treatment:

"Patients having become acclimated after three to ten days, they are wheeled upon the open gallery where they are directly exposed to the air and sun. Disregarding the location of the disease and whether it be a case of coxitis, spondylitis, arm or foot tuberculosis, the insolation begins always at the lower extremity. On the first day at hourly intervals the feet are exposed three or four times during a period of five minutes.

"The arms are exposed in the same way the next day. The third day the exposed area is enlarged to the inguinal region, the abdomen and breast are included on the fourth and fifth day, at first for only five minutes. All this time the location around the heart is covered with moist packs and the head shaded. The exposures are increased five minutes each day until eventually the patient receives a full sun bath of from three



to five hours daily, and in some cases as much as seven hours. If there is erythema or headache or nervous depression, the duration of exposure is lessened.

Each case of course must be studied individually, and a close watch of pulse and temperature is maintained."

#### *Pigmentation.*

Rollier lays great stress on the importance of pigmentation as does everyone conversant with the subject. He claims that blondes who do not pigment readily, especially the red haired blond, will not do so well under the treatment, and he considers the rapidity with which pigmentation takes place an index to the prognosis. Just what role the pigmentation plays is not quite so certain. Some, including Rollier, think that it acts to protect from the short rays, while it admits of the penetration of the long ray. Others ascribe to it a chemical power of in some way converting the short ray into a long one, but whatever the theory, it seems well established that pigmentation is the first important step in the treatment.

The importance of combining the usual methods of maintaining rest of the part is dwelt on by all the writers, or perhaps I should say *unusual methods*, for Rollier refuses to use any cast or brace that cannot be removed daily.

Wignard expresses the idea in a few words when he says: "If the sun is a great healer, it certainly has no orthopedic power. Lesions ought therefore to be immobilized in good positions. The apparatus should have openings sufficient to allow large exposure to solar radiation without the interposition of any dressings."

It is also emphasized that in only exceptional cases should operative procedures be undertaken. Cold abscesses will often absorb, and when they do not they should merely be aspirated and then injected with iodoform emulsion or Murphy's formalin solution in glycerine. Rollier remarks that "to transform a closed tuberculosis into an open one means to increase the gravity of the case a hundred fold."

Rollier also dwells on the bactericidal effects of the sun's rays so that it is applicable to an open sore of any kind. He says: "Heliotherapy realizes all the conditions of an ideal antiseptic; while antiseptics almost always kill the cell before having neutralized the action of the germs, solar radiation by its local and general action exercises its bactericidal power by always safe-guarding the cellular functions. This function is also exerted on the deeper lesions and in the fistulous tracts."

#### *Altitude.*

While Felton and Slottenzenberg claim excellent results in cases treated at the seashore, practically everyone writing on the subject appears to be impressed with superior results of the treatment when carried out at a high altitude. This is emphasized not alone by Rollier, but by many treating patients at low altitudes. Bardenheuer who carried out the



treatment at Cologne explains his poorer results as compared to Rollier's by saying, "This is due principally to the fact that treatment was not continued, and also to the fact that heliotherapy was carried on at the 'ground level.'" He claims good results, nevertheless.

Jeanebert, referring to treatment of children at Basle, Switzerland, a place of comparatively low altitude, gives it as his opinion, "That the sun cures tuberculosis on the plain as well as on the mountain, but the treatment on the plain must be twice as long." When it is remembered that one of the dangers of cure of orthopedic cases lies in the depression and mal-nutrition incident to the long stay in bed, or to the immobilization of a limb for a year or more, it is evident that the high altitude presents great advantages.

Jerusalem reports fair results in cases treated at Vienna, but says they are inferior to those obtained in a high altitude.

In America, Campbell at Memphis, Hammond at Providence, R. I., Pryor at Buffalo, N. Y., and Kime at Fort Dodge, Ia., all places of low altitude, claim fair results with the treatment.

Among the theoretical reasons given by Rollier for the better results at high altitudes is the following:

"The opinion of Finsen that the effects of light are confined to the tegumental surface is not true of solar light in high mountainous districts. here it has a much deeper penetrative power. The atmosphere absorbs a considerable part, especially the infra-red and ultra-violet rays. This absorption amounts to 25 to 30% at sea level, but it is only about 6% at the top of Mt. Blanc."

The well known effects of high altitude upon the blood is also no doubt a factor and according to Saake the air of the mountains contain more radio-active emanations than the air at low altitudes.

I have tried to give as concise a statement as possible of the literature and I will now as briefly as possible speak of my own experience with the treatment in the Southwest.

It occurred to me when I first read of Rollier's work that New Mexico and the Southwest in general presented the best climate in the world for the treatment by sun bath.

I spent one winter in Switzerland at Davos Platz and I can safely say that in the amount of sunshine we are as far ahead of Switzerland as that country is superior to the rest of Europe. As to altitude, the lowest point in our state is about the altitude of Leysin. Last month (November, 1916), in New Mexico we had 90% of the possible sunshine without a single day that was cloudy all day. All arguments favoring the altitude resorts of Switzerland apply even more strongly here. The hours of sunlight are longer here and the percentage of sunshine much greater. The treatment can also be taken much more comfortably owing to our freedom from snow, while in Switzerland at 5,000 feet altitude the snow often falls in September and lasts till May.

Altogether, this country presents the ideal climatic conditions for carrying out the treatment, and is superior, not only to the rest of America, but to Switzerland as well.

*Report of Cases.*

As previously stated, I can report only an extremely small number of surgical cases; this is explained first by the fact that tuberculosis of any kind seldom occurs in this climate, secondly because our sanatorium was built for the treatment of the pulmonary case. I will, however, briefly report a few cases treated during the past five years: C. B., 4 years old, was brought to the sanatorium suffering from tuberculosis of the right hip. There were four discharging sinuses. There had been no attempt at immobilization of the hip or indeed treatment of any kind. He pigmented nicely and in four months returned home with all sinuses healed. One of these re-opened twice, but when last I heard from the boy, all sinuses had been healed for over a year.

Case No. 2: W. F., age 3 years, suffering from closed tuberculosis of left hip as demonstrated by the skiagraph. He was put to bed with an extension apparatus and solarization started. He was in the sanatorium only six weeks, but his mother continued the treatment for six months at their home at an altitude of 6,000 feet. There was complete recovery with good motion.

Case No. 3. G. S., 19 years of age, a most interesting case as combining the pulmonary and surgical types. He had spent six months in a well known Eastern sanatorium, but both hip and lung condition had grown steadily worse, and he was advised to come to me at Albuquerque. He first returned home and there removed the extension apparatus. When he arrived at the Albuquerque sanatorium he had five discharging sinuses from the right hip and his left lung showed moist rales all over the upper lobe. Fever was 102, sputum 2 oz., with many t. b. present. He was averse to using extension again, so was treated without orthopedic apparatus of any kind. At the end of one year all sinuses were healed, and the lung was almost symptom free, there being only a very few rales after cough at the extreme apex. By indiscretions he has lost some of the early improvement in his lungs, but the hip after two years is in good shape, but of course with ankylosis of the joint.

I should add that both Beck's paste and tuberculin were used in both cases No. 1 and No. 3; however, both of these had been used in the treatment of case No. 3 in the East without result.

Case No. 4. Mrs. W., 30 years of age, a third-stage case of tuberculosis of lungs, with trouble on both sides, sputum 3 oz., full of bacilli. Diarrhoea, which I believed to be tuberculous, had lasted, despite all treatment, for over three months. Examination of stools showed considerable mucous and numerous tubercle bacilli. Fever 100 to 101. She had con-

stantly failed in an Eastern institution. Solarization started and after five months the diarrhoea disappeared, and a year later the lung condition allowed her discharge as apparently arrested.

It has been chiefly the pulmonary case that I have treated, and it is in that type of case that I am chiefly interested. It is unfortunate that the value of a given treatment in pulmonary tuberculosis must usually depend upon impressions rather than upon any statistical facts, but this is certainly true except in a few endowed, municipal or governmental institutions, for the simple reason that the patients will not remain through the months or years necessary to cure the third stage case that we in the West usually must deal with. They usually leave an institution when they have secured marked symptomatic improvement.

So I can only speak of my impression of the treatment after using it for almost five years, and the opinion of my co-worker, Dr. Peters.

I have always felt that there was a certain analogy between the use of heliotherapy and treatment by tuberculin. With the latter I have always reasoned that if it can be proved of value in the orthopedic case there must be some value for the treatment if used carefully enough in the pulmonary case.

That in the pulmonary case one must avoid reactions, go slower, take longer time; and so with heliotherapy one must with the pulmonary case avoid too long exposures, watch the temperature and pulse closer than in the surgical types continue the treatment over a longer period and altogether use the treatment much more cautiously than when treating other types of tuberculosis. When this is done, however, I believe there is a distinct value in the treatment.

One must constantly repress over-enthusiasm in the patient and insist that they do not exceed the exposure prescribed, otherwise they are almost sure to take long exposures with the result that they will develop a fever anywhere from 100 to 103, together with increase in sputum, and for several days, at least, will suffer from marked depression.

One good resulting from the firm pigmented skin that I have never seen mentioned, is a comparative freedom from colds. This alone, to my mind, makes the treatment worth while. That many pulmonary cases do make better progress after beginning solarization, however, both Dr. Peters and myself are convinced; indeed, the progress in a few cases has appeared quite remarkable to us.

I will only burden you with one case history of this kind; a Mr. B., age 46, manufacturer, an unusually large man, standing 6 feet 3 inches in his stocking feet. When he came to us from New York, where he had been taking the home treatment, he had moist rales practically over the entire left lung and rales after cough over the right lung from the hilus to base. There were 3 ozs. of sputum daily, loaded with bacilli. He had afternoon fever up to 102 and was suffering from hemorrhages. Under the usual rest cure the fever soon decreased to normal, but without much



improvement in the pulmonary findings. He was started on sun baths and was soon pigmented from head to foot and co-incidentally the pulmonary signs began to decrease. At the end of four months there were only a few rales to be heard at the base of the left lung posteriorly after cough. Sputum was negative and small in amount.

*Observation of Blood.*

During 1914 at the Albuquerque Sanatorium, we began a study of the blood of patients taking the sun cure, Dr. A. A. Duncan, who was then associated with us, doing the major portion of the blood counts.

We found in all cases an increase in the lymphocyte count averaging in thirty cases about 12%. That this increase was relative rather than actual would appear to me proved from the fact that it would drop back to normal by the next morning. It is probable, however, that the patient's hyperemia and lymphocytosis resulted in a condition somewhat similar to that produced locally by Bier's hyperemia treatment. We also found a decrease in the blood pressure at this time, probably due to the dilatation of the superficial blood vessels.

*Application of Treatment in the Southwest.*

We have found that we must modify greatly the rules laid down by Rollier for the routine treatment.

Our sunlight is so much more intense that exposures must be much shorter than those advised by that author. We begin with fifteen minutes exposure front and the same for the back, but exposing only the feet at first, then each day exposing two or three inches more of the legs and finally the body, taking from two weeks to a month to reach complete exposure of the body. At no time, however, is the head exposed; it must be shaded under an umbrella or other shade. We may then increase the time of exposure up to 30 minutes front and 30 minutes back, but seldom more than that. With the 30 minutes exposure it requires but a few weeks to get marked pigmentation.

A sensation of dizziness or nausea is warning to discontinue the bath for that day.

Before closing, I will add that Dr. O. T. Hyde of Albuquerque has secured some remarkable results with solarization, and another fellow-townsmen, Dr. D. C. Twitchell, carried out some interesting experiments with guinea pigs which went to prove that the direct rays of the sun on experimental tuberculosis in animals was curative and healing. Dr. LeRoy S. Peters, my associate, combined with me in all cases treated during the last three years.



## ROLLER'S STATISTICS OF 1129 CASES 1903-1913

## The Heliotherapie of Tuberculosis

1903-1913

IV Statistics

1903-1913

No. of Patients 1129	Total	Cured	Impr. Stat.	Died	Remarks
Adults: 652					
Children: 477					
Closed cases at arrival.....	804	703	73	22	6
Open cases (spontan or post op.) .....	325	242	39	19	25
Spondylitis without abscesses .....	102	90	10	1	1a (a) Arrived with complete Paraplegia and Cys- titis.
Spondylitis with abscesses .....	68	64	2	1	1b (b) Arrived with acute Tub. of the lungs.
Spondylitis sec. infection.....	28	17	6	3	2c (c) Mult. arrived in ex- tremis. d (d) Arrived with Amyloid.
	198	171	18	5	4
Tub. of the Pelvis with- out abscesses .....	6	6	....	....	....
Tub. of the Pelvis with abscesses .....	10	10	....	....	....
Tub. of the Pelvis sec. infection .....	21	9	1	6	5
	37	25	1	6	5
Coxitis without abscesses .....	33	76	7	....	....
Coxitis with abscesses .....	36	29	5	2	....
Coxitis sec. infection .....	39	20	9	3	7
	158	125	21	5	7
Gonitis without abscesses .....	94	85	7	2	....
Gonitis with abscesses .....	14	12	2	....	....
Gonitis sec. infection .....	12	9	1	1	1
	120	106	10	3	1
Tub. of the Feet without abscesses .....	35	33	2	....	....
Tub. of the Feet with abscesses .....	17	15	....	1	1
Tub. of the Feet sec. infection .....	42	39	2	1	....
	94	87	4	2	1
Tub. of the Shoulder with- out abscesses .....	3	3	....	....	....
Tub. of the Shoulder with abscesses .....	4	3	1	....	....
Tub. of the Shoulder sec. infection .....	5	2	3	....	....
	12	8	4		

Tub. of the Elbow without abscesses .....	9	8	1	....	....	20 of the 28 cured cases secured functioning of the joints.
Tub. of the Elbow with abscesses .....	6	6	....	....	....	
Tub. of the Elbow sec. infec. ....	15	14	1	....	....	
	30	28	2			
Tub. of the Hand without abscesses .....	8	7	....	....	1a (a)	Complicated by Tub. of the lungs and Meningitis.
Tub. of the Hand with abscesses .....	5	5	....	....	....	
Tub. of the Hand re-infected ....	8	5	1	....	1b (b)	Mult. Tub. and Tub. of the lungs shoed extremis. All 17 cured cases secured functioning of the joints.
	21	17	1	....	2	
Spinae ventosae without abscesses .....	12	12	....	....	....	
Spinae ventosae with abscesses .....	3	3	....	....	....	
Spinae ventosae re-infected.....	17	16	1	....	....	
	32	31	1			
Osteitis clean (closed).....	36	32	4	....	....	Mult. Tub. Amyl. 1 Miliartub.
Osteitis secondary infection.....	49	41	4	2	2	
	85	73	8	2	2	
Peritonitis, closed .....	57	49	4	3	1a (a)	With Meningit. 3 with Tub. intest. ulcer. 1 Amyloid.
Peritonitis with Fistula post. op. ....	29	20	3	2	4b (b)	
	86	69	7	5	5	
Tub. of the Kidneys .....	31	12	13	6	....	1 with Amyloid, came in cachectic condition.
Tub. wounds after Nephrectomy .....	20	15	4	....	1	
	51	27	17	6	1	
Tub. of the Epididymis .....	9	7	2	....	....	
Ileo-cecal .....	16	10	4	....	2	Both came with Enteritis Tub. ulcer. grav.
Adanexia Tub. ....	6	5	1	....	....	
Adenitis and Tracheo bronchial-glands without abscess .....	75	64	4	6	1	1 with Tbc. Pulm.
Adenitis and Tracheo bronchial-glands with abscess .....	23	23	....	....	....	
Adenitis and Tracheo bronchial-glands secondary infection.....	38	35	3	....	....	
	136	122	7	6	1	
Polyarthrit. Polyserositis. Poncex Rheumat. ....	10	9	1	....	....	
Tub. of the Eye .....	9	9	....	....	....	
Tub. of the Ear .....	3	3	....	....	....	
Scrofuloderma. Tuberculide. Lupus .....	16	13	3	....	....	

*Biography.*

*Vignard* (of Lyons) and *Jouffray* (of Cannes). La cure solarie des tuberculosis.

Monograph No. 74, L'oeuvre medico-chirurgicale, Paris, 1914.

*Hussy, A.*, Esfogle der Helioptherahy un Hochgebrige Butr. zus. Klinik Chur. 1914 XVI No. 3.

*Jerusalem*, Regarding Sun Treat. of Surg. Tuberc., Wein. Med. Woch, 1911, No. 33.

*Traves, A.*, Heliotherapy in Surgical Tuberc., Assc. de Med. et Chic. Infant, 1916, XVIII, 415.

*Bardenheuer*, Heliotherapy of Peripheral Tuberc. (particularly articular) Strahlentherapie, 1912, Vol. I, 211-273.

*Felten and Slottenzenberg*, Sun Treatment of Surg. Tuberc. at the Seashore. Zemalb. f. Chic., 1912, XXXIX, 1720.

*Kish & Gratz*, Einiswhung der Sonnenstrahlen auf Tuberculose Fistalu Arch. fur Klin., Chic., 1914, CVI, No. 2.

*Wittek*, Heliotherapy and Surg. Tuberc., Zentralh. f. Chic., 1913, X2, 1960.

*DeQuervain*, On the Theat. by Heliotherapy of Surg. Tuberc. Dent. Zielsch. f. Chic. 1912, CXIV, 301.

*Witmer*, The influence of Heliotherapy at High Altitudes in Surg. Tuberc., Deut. Zeitschs, f. Chic., 1912, CXIV, 308.

*Franzoni*, On the Influence of Heliotherapy on Tuberc., sequestrae, Deut., Zeitschif f. Chic., 1912, CXIV, 371.

*Poncet and Leriche*, Report to Acad. of Med., Paris. Rev. gen. de Chin., et du Thesp., 1912, XXVI, 671.

*Mayet*, The Heliotherapeutic Treatment of Surg. Tuberc., Revgen de clin et de Thesp., 1913, XXVII, 25.

*Jeanneret* (of Lausanne) Heliotherapy in a children's hospital on the plain. Rev. Med. de la Suisse Romade, 1915, XXXV, 435.

*Hallopean and Rollier*: Sur les cures solaires dulcet dous les stations d,altitude. Acad. de Med., Paris 1916, LX 422.

*Delchaux*: The treatment of internal diseases by the sun cure. Annales de Med. et Chir. Infant., 1915. XVIII 269.

*Rollier's Contributions.* There are twenty-five of these and many of them are so similar that it is only profitable to mention a few.

Altitude and Sun Cures of Surg. Tuberc., Zeits. for Chir. 1912. 1300 XXXVIII.

On the sun treatment of bone-joint tuberc. Zeit. f. Orth. Chir. 1913. XXXII 337 371.

Heliotherapy of Tuberc., with special reference to surgical forms. Ergebnisse d. Chir. n. Orth. 1913. VII.

Communication made to the International Cong. of Med., London, 1913. Schweiz. Rundschau f. Med., 1913, 1914. XVI 201.

Heliotherapie et Tuber. des Tuberc., Urinaries., Rev. Med. de la Suisse Romade, 1916, XXXI 24.

*American Contributions.*

Campbell, W. C. The solar treat. in affect. of bones and joints. J. A. M. A., 1916. LXVI, 1348.

Twitchell, D. C. (Albuquerque, N. M.) The effect of the direct rays of the sun of experimental tuberc. New Mex. Med. Jour., 1914, 1915, XXIII, 124.

Dietrich, H. Heliotherapy with special reference to the work of Rollier at Leysin, J. A. M. A., 1913, LXI, 2229.

Kime, I. W. Heliotherapy in the treat. of Tuberc. Jour. of the Iowa State Med. Soc., 1915, V. 148.

Hammond, R. Heliotherapy as an adjunct in the treatment of bone disease. Americ Jour. of Orth. Surg., 1913, 1914, XI, 269.

Pryor, I. N. The Rollier treatment for so called Surg. Tuberc., N. Y. State Jour. of Med., June, 1915, XV, 208.



## THE PHARNYX AS A POINT OF PRIMARY INFECTION IN TUBERCULOSIS.

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BY

DR. ROBERT R. BROWNFIELD, Phoenix, Arizona.

(Read at the Seventh Annual Meeting of the Arizona Association for the  
Study and Prevention of Tuberculosis, Phoenix, April 25, 1916.)

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The subject of Tuberculous Infections of or in the Pharynx is one of especial interest to me by reason of a theory which I have evolved as a result of clinical observations in affections of this nature.

It is my opinion that tubercular infections in the pharynx occur much more frequently than is commonly believed and that, due to an intimate connection, too frequently ignored, it is a much greater factor in the causation of pulmonary infection than physicians in general realize. Many cases of infection can be arrested by careful and early attention to the pharynx, which, if neglected, later involves the glands, lungs, meninges or other vital structures. Arnold C. Kleb says: "The lymph nodes are by far the most frequent point of primary T. B. infections." I believe the most frequent sites of invasion of tubercle bacilli in the human subject is that of the lymphatic follicle of the pharyngeal structures, and they frequently propagate in these follicles, from which they find their way through the lymph or blood streams into other less resistant tissue, without ever truly involving the surrounding pharyngeal tissue sufficiently to produce a typical tubercular lesion.

I wish briefly to remind you of the anatomy of the lymphatic vessels of the throat and chest, that you may more readily appreciate the ease with which an infection of one may be communicated to the other.

Without going into the details of the nodes and smaller lymph channels of the throat and head, we will start with the jugular duct which collects the lymph from the head, neck and throat. It descends with the internal jugular vein and after joining on the left side with the thoracic and subclavian ducts, empties into the subclavian vein at the point of junction of this vein with the internal jugular. Through the thoracic duct the lymph channels of the throat are directly connected with the left lung and pleura, the abdominal and pelvic viscera and the lower limbs. Not infrequently the jugular trunk enters the vein independently, thus furnishing a less direct path for infection. The right jugular duct, after joining the right subclavian, and right broncho diastinal, enters the right subclavian vein, thus making a direct connection of the right lung and pleura with the throat. The subclavian and bronchomediastinal on the right side collect

lymph from the right chest wall, the right lung and pleura, the heart and the upper part of the liver. Considering the direct connection of the left lung through the thoracic duct, and the left bronchomediastinal, if all other conditions were equal, this should be the lung most frequently infected, for more than three-fourths of the entire body, including the stomach and intestines are possible avenues of infection, while the right lung has practically no other source of indirect infection than the throat. However, notwithstanding these important facts, there is considerable authority for stating that the right lung, on the contrary, is more frequently the first seat of pulmonary infection. If this is true, the frequent direct entrance of the left jugular lymphatic into the vein, thus shunting the throat drainage away from the left lung, may well suggest the explanation, and should lead to further investigation along these lines, for if this anatomical anomaly of the lymph duct is sufficient to counteract and over balance all other sources of infection to the lungs, it adds greatly to the importance of the throat as a site of entrance for the organism.

Recent investigation has established the fact that infection may follow the lymphatic ducts either in the direction of the lymph flow or opposed to it with apparently equal ease. This has been proven by finding at post-mortems primary tubercular ulcers in the intestine with lymphatic nodes infected both above, in the direction of the lymph flow, and below, opposed to the flow. Further experiments have shown that when a fixed stain, such as india ink is injected into the tonsils, or other pharyngeal tissues of animals, in a comparatively short time the stain is widely diffused throughout the lungs.

Any chronic inflammatory condition of the pharynx should be seriously considered as affording opportunity for easy entrance and propagation of the tubercle bacilli. It is a well recognized fact that the crypts of the tonsils are frequent points of entrance of the tubercle bacilli, and as a prophylactic measure the tonsils should always be removed if they present a condition of chronic inflammation. On the other hand the posterior pharyngeal wall receives but little attention, even though it is much more richly supplied with lymphatic crypts, which are easily infected but unlike the tonsilar crypts, are not emptied by muscular action involved in deglutiation. The fact that the tissue of the pharynx exhibits such a remarkable resistance to tubercular infection, and therefore is seldom the seat of an actual tubercular inflammation, may explain to some extent why this point of invasion has been so much neglected.

Enlarged pharyngeal tonsils, commonly designated as adenoid vegetations, are fertile fields for infection. The lingual tonsils are often overlooked entirely, however, they are a very frequent cause of a full, choking sensation in the throat and if enlarged they irritate the epiglottis and cause a constant tickling, dry cough. They may by mechanical irritation actually produce ulceration of the epiglottis. Enlargements of the lin-

gual tonsils are a grave source of danger to the larynx of any tuberculous patient.

The pathological condition, which I consider of most importance, is chronic follicular pharyngitis, or granular pharyngitis, as it is some times called. The primary inflammation and hypertrophy may be due to the action of any or all of the organisms common to respiratory infections, the streptococcus being most commonly the cause. The infection becomes chronic by the retention of the inflammatory exudates and micro-organisms of a preceding acute inflammation and in my opinion it may be secondary to practically any of the acute infections of any part of the respiratory tract. In some cases only one follicle is hypertrophic; in others the posterior pharyngeal wall is thickly dotted with red elevations, each one furnishing a culture tube for development of a colony of tubercle bacilli, whether the bacilli is breathed in with air or taken in with contaminated food.

The Pennsylvania Sanitation Board in the course of experimentations along lines to determine the site of entrance, fed swine virulent tubercle bacilli and found that there was no involvement of the lymphatics of the mesentery, but that the tonsils and other pharyngeal structures were usually involved primarily and the lungs secondarily through the cervical lymphatics.

Monkeys fed on tubercle bacilli died of pulmonary tuberculosis, and post-mortem showed the primary involvement of the nodes of the throat.

My object in presenting this paper is not with a view of attempting to force upon you the belief that every case of tuberculosis is infected through the medium of the throat but rather to attempt to impress upon you the true importance of this avenue.

Every case presenting itself for examination for possible chest trouble should call for a careful and systematic inspection of all mucous surfaces of the nose, pharynx, the faucial, pharyngeal and lingual tonsils and any abnormal condition which these tissues may present, should be given prompt and careful attention.

If this should become a universal practice of physicians I feel secure in asserting that there would be a great decrease in the number of unfortunate sufferers from the dreaded white plague.

The following specimens, reported on by Dr. W. W. Watkins, of the Phoenix Pathological Laboratory are all hypertrophied follicles from the posterior pharyngeal wall.

Phoenix, Arizona, April 22, 1916.

Dr. R. R. Brownfield,  
Phoenix, Ariz.

Dear Doctor:

Reporting, partly on the tissue from pharynges.

9542—Dr.:—This consists of lymph tissue, including mucous gland, with the corium and portion of muscularis. The glands seem to be normal,



both in the crypt and in the ramifications of the gland in the corium. There is a distinct area of granuloma in the center of the lymph follicle, bearing the structure of a tubercle.

9768:—Boy:—This shows a typical area of granuloma in the lymphatic tissue.

We did not find tubercle bacilli in section; this is not surprising, because finding the bacilli is a very difficult thing.

Very truly,

W. WARNER WATKINS.

Dr. R. R. Brownfield,  
Phoenix, Ariz.

Dear Doctor:

Reporting on the other two tissues from the pharynx. Mr. S. and Mrs. G. both of these show beginning giant cell nodular formation within the masses of lymph cells. These are the appearances upon which we make diagnoses of tuberculosis in lymph glands. The next tissue you remove, send it to us under aseptic conditions, so that we may do animal and cultural work for the tubercle bacilli.

Very sincerely,

W. WARNER WATKINS.

Lab. Reports 10096 and 10144

Dr. Brownfield:

Post-pharyngeal follicle from Mrs. V. S.:—This was macerated in sterile mortar and cultured on Petroff's media and inoculated into guinea pig on May 3rd. No growths appeared on media. Pig was posted on May 22nd. At the site of inoculation on the peritoneal surface there was a small nodule 3 mm. long by 1 1-2 mm. wide. This was taken off, along with the thickness of the muscular wall and sectioned. It shows the typical appearance of tuberculous inflammation. It was submitted to another pathologist with the statement that it was a peritoneal nodule and the diagnosis of lues or tuberculosis promptly made.

Tissue from Miss H.:—The same examinations as those detailed above were made. No growths appeared on Petroff's media and no pathological changes of any kind were found in the guinea pig.

Very truly

W. WARNER WATKINS.

This last case (Miss H.) is one that has been under treatment for some time and was thought by me to be cured, however I took a tissue specimen to check with preceding case (Mrs. V.) which had but little treatment before the specimen was taken. The follicles in Miss H.'s case were originally in a worse condition than were Mrs. V.'s.

BROWNFIELD.



## DISCUSSION

Dr. F. D. Wilson:—Dr. Brownfield's paper is of extreme importance to this association. Primarily we are banded together for the prevention of tuberculosis, cure is secondary. The first step in the prevention of tuberculosis is to understand the avenues of infection. It is becoming more and more generally conceded that early tuberculosis is always a lymphatic infection. What we call pulmonary tuberculosis is really a conglomeration of infection; open ulcerative tuberculosis is, to a very large extent, septic infection. If we are going to prevent and stamp out early tuberculosis, we must understand the avenues of infection and appreciate that the majority of these cases are lymphatic infections. Up to the age of 14 or 15 years, some 80 or 95 per cent of children are involved, but this does not mean lung tuberculosis, simply lymphatic tuberculosis. At that stage all cases of tuberculosis are amenable to treatment; there is no reason why any child with bronchial glandular tuberculosis should go on to pulmonary tuberculosis, if he is given a fair chance. As far as the campaign against the spread of tuberculosis is concerned, I have arrived at that point where I feel absolutely sure that we are wasting time treating the advanced case, except in so far as we can isolate him and prevent his being a focus of infection. The only logical way to stamp out tuberculosis is to take the coming generation, appreciate the fact that our tuberculosis is a localized glandular lymphatic infection and work at it from that point. I am sure we all agree with Dr. Brownfield in his statement about the glandular chains in the neck. We all find such glands in our children's necks, especially in the posterior chain. The sooner we recognize the fact that these are tuberculous, that an enlarged gland is often tuberculosis, and not wait until the child shows active pulmonary symptoms, the sooner will we arrive at a point where we will stamp out the disease.

Dr. W. W. Watkins, Phoenix, Ariz:—When Dr. Brownfield first mentioned this matter to me and asked my co-operation, I was very skeptical; on slicing the first portion of lymphatic tissue from his cases, I was much surprised to find a well-developed tubercle. This tubercle is located in the center of the mass of lymphatic cells. The other cases examined did not show such a well-developed tubercle, only beginning formations, with giant cells surrounded by a few endothelial cells. In studying up the subject in this connection I learned something which I will offer to correct a very popular misconception regarding the formation of tuberculous tissue. The granulomatous nodule, or tubercle is generally thought to require a considerable period for its formation. Recent work from the Rockefeller institute by means of vital straining after inoculation with tubercle bacilli has thrown a new light on this matter. It has been clearly demonstrated that the tubercle bacilli are ingested within 30 minutes after their entrance into the blood stream, appearing within the mononuclear leucocytes. Within 24 hours giant cells form, and within thirty-six hours complete tubercles appear, giant cells in the center and endothelial cells and round cells arranged in the well known orderly manner outside. So that the appearance of tubercles in the pharyngeal lymphatic tissue or elsewhere does not mean a long standing infection there; the bacilli may have lodged there only 36 or 48 hours previously. Furthermore, it would appear that these tubercles, as is usually thought, are not necessarily permanent structures. Only when the bacilli remain alive and require an armed force to surround them is the tubercle permanent; the microscopic tubercle (giant cell surrounded with endothelial cells) may reach the stage that we found in these tissues, and then disintegrate and allow the bacilli to pass on. We hope to continue these investigations and establish the actual status of the pharynx in the development of glandular tuberculosis.

Dr. R. E. Thomas, Phoenix:—When I saw the title of Dr. Brownfield's paper on the program, I came prepared to have an argument, for I believe that gross tuberculosis of the pharynx is an exceedingly rare condition. In an experience of more than nine years, I have seen a very small number of cases; I can count them on the fingers of one hand. But he has taken the wind out of my sails by changing the title of his paper. I believe that the line of investigation he has begun should be carried out, and I think that Dr. Brownfield and Dr. Watkins together will be able to do some valuable work along this line and show what is really in this theory. Personally I do not take it readily for one reason, if no other; that is, as Dr. Wilson mentioned, that glandular tuberculosis is in nearly every case, I believe, simply a lighting up of an infection obtained in childhood. That in childhood, the matter of glandular tuberculosis is a matter of resistance of the individual to tuberculous infection, the infection being already there. If an individual lowers his

resistance by dissipation, poor food, bad hygiene, he is apt to develop glandular tuberculosis. I do not believe that the lymphatic tissue on the back of the pharynx has anything to do with it. Possibly in children this lymphatic tissue is an atrium for the infection and I hope Dr. Brownfield will be able to prove whether this is true or not. But I think, from what he has told us, we should take more care of the throats of children, having adenoids attended to in every case. I think along this line we can get a good deal of value from this theory.

**Dr. James:**—"I do not think that I can add anything. That paper was very interesting to me. My experience has been similar to that of Dr. Thomas; I do not think I have seen more than three cases of gross tuberculosis of the pharynx. In the course of routine examinations of the throats in tuberculous patients, I have run across a great many cases of chronic follicular pharyngitis, but, do not remember a single case of follicular pharyngitis in a real early tuberculous case. Furthermore I do not remember any of the cases of follicular pharyngitis which do not respond to simple measures of treatment. This paper of Dr. Brownfield's has given us pathological findings and, along with the other men present, I will certainly await, with interest, further reports."

**Dr. Brownfield, in closing:**—"There is very little more to be said, except to apologize for the incompleteness of the report, but I hope you will understand that I had some difficulties to overcome. It is not always possible to see a patient and tell him you are going to do some cutting on his throat with no other idea than to test some fool theory. I have had this theory and worked along these lines by observation for probably two years; I have spoken to Drs. Thomas and Watkins and a number of other men in town, who are interested in tuberculosis. As I remember they have, in most cases, discouraged me, Dr. Thomas especially. I tried to explain to him that he should encourage young men, but he insisted that young men had better be set right in the start and not be going off on a tangent, trying to find out something that does not exist. However I have been so thoroughly convinced of the importance of the pharynx in these cases that I have given them very careful attention. As Dr. James says, they do respond to treatment, and that is the thing that I laid most stress on, the fact that they do respond to treatment. If this is tuberculous, if a colony of tubercle bacilli is being developed there to feed the lymphatics of the throat and chest and will still respond to treatment, how much more important is this work. Very frequently these follicles will be infected to a very slight extent as to number; I have seen a number of cases with three or four and quite commonly see only one. In one of these cases, there was a single follicle, which was removed completely. I believe it is just as important to remove the primary focus of infection in these cases, if it is tuberculous (which I am not saying positively yet), as it is to remove the primary focus in lues, and we are told that this is very important. Dr. Corbus has said that if we can remove the primary sore in lues it is an important measure in preventing infection of the entire body. Now, if we have more or less of a parallel, I think we must recognize the importance of taking out this primary lesion. If there are three or four, or a half dozen lymphatic follicles infected, if they were in my throat, I feel so confident that they are important avenues of infection, that I would be glad to submit to the removal of each one of them by thorough cauterization. I assure you that we will continue along the lines that we have started; that we will try to prove or disprove the theory; we will try to be fair and will not make an effort to prove our idea, but will simply try to find out whether or not it is true. At some day in the future, Dr. Watkins and I will be able to give a more intelligent report on the subject."

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THERAPEUTIC NIHILISM IN TUBERCULOSIS.

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BY

DR. A. D. WILSON, Prescott, Arizona.

(Read at the Seventh Annual Meeting of the Arizona Association for the Study and Prevention of Tuberculosis, Phoenix, April 25, 1916.)

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One of the prominent facts in the history of medicine has been its tendency to go to extremes. A new cure or surgical procedure, if properly launched, is immediately grasped by an eager profession, placed in the limelight, used to a great extent in a hit or miss manner, and, in proportion to its ability to disappoint or harm, is relegated to the negative swing of the pendulum and consigned to the medical junk heap.

If the therapeutic procedure was possessed of merit, it generally remained for critical observers to resurrect it and place it upon a firm foothold in the middle ground of medical practice.

This unfortunate habit of rushing to extremes is largely due to the impossibility of basing our curative remedies on a strictly scientific ground, and will, no doubt, remain with us until medicine reaches the stage of a more exact science.

While surgery has perhaps escaped these furors to a greater extent than internal medicine, still we have comparatively fresh in our minds the epidemics of Ovariectomy and Tonsilectomy.

I have singled out for my discussion the tendency to extremes in therapeutics as it affects the treatment of tuberculosis.

Before the etiologic factor of tuberculosis was discovered, the treatment of phthisis was entirely an empirical drug treatment. This was undoubtedly pushed to extremes in the endeavor to meet a forlorn situation. The cod liver oil and creosote days still leave a bad taste in our mouths. After the discovery of the *Bacillus Tuberculosis*, all eyes were centered on a specific cure for the disease. While the bacteriological work on tuberculosis has been of tremendous value, and may ultimately lead to a specific cure, at the present time our therapeutic treatment of tuberculosis must in most cases be carried on just exactly the same as if the etiologic factor were unknown. We must treat the patient as we find him, and to all intents and purposes forget the *Bacillus Tuberculosis*.

In Pulmonary Tuberculosis we have a chronic infectious disease which centers its activities in the lungs, but which reaches out with its toxins to every tissue of the body. Our endeavor should be to aid nature in neutralizing and excreting these toxic products, and to preserve as nearly as possible the physiological functions of the organism.



Of late years there has been a great hue and cry in the land that the medical profession had no drug in its materia medica that could cure tuberculosis. No mention was made of the fact that we had no drug that would cure pneumonia, typhoid fever, diabetes, etc. This hue and cry was raised largely to get the sick out of the hands of the quack and patent medicine man, but it has resulted in that very familiar reply of the tubercular today, "Why should I go to a physician when he has no drug that will cure my tuberculosis?" It is the same in regard to the climatic-diatetic treatment. The old cry was "Colorado or death." Now the pendulum has swung back so far that they say climatic treatment has no special value—one outdoor air is as good as another.

It is not my intention to go into the relative values of different sections of the country in regard to their curative values in tuberculosis. I simply mention this as another example of the tendency to go to extremes. What is the solid, substantial middle ground of therapeutics in the treatment of tuberculosis?

First, let us consider our pathology, as this is the basis of all scientific medication. The unit of tuberculosis is the tubercle. The result of tubercle is cell-proliferation, infiltration, consolidation and ulceration, plus intoxication.

Intoxication, in some degree, is present whenever and wherever tubercle bacilli live and multiply in the tissue of the body. I disagree absolutely with the theory of a pre-tuberculous stage. I also disagree with the often-heard statement that a patient may be infected and not have tuberculosis. My conception of tuberculosis is the implantation and multiplication of tubercle bacilli in the tissue of the body. This infection may be so slight as to cause no appreciable symptoms, but it is tuberculosis, nevertheless, and differs in degree only from a readily recognizable tuberculosis.

The medicinal treatment in tuberculosis is two-fold: First, the treatment of symptoms due to the presence of tubercle in the lung. Second, the treatment of symptoms due to intoxication.

Under the first heading, our principal concern is the cough. There is an old axiom that "there is nothing worse for a cold than a cough," and this applies more especially to tuberculosis. Every cough means a distension and wracking of the alveolar tissue of the lungs in which we may presuppose there is going on a healing process. Cough is generally due to irritation of the bronchial mucosa. This may be due to necrotic material from a tuberculous focus or to a simple bronchitis which is always present in the region of tuberculous infiltration. The regulation of cough should always be in direct proportion to the amount of sputum raised. A patient who raises a mouthful of sputum with each cough cannot be helped to any extent by controlling the cough, although a sedative at night will prolong the intervals and allow a more generous accumulation, thereby giving the patient more rest. The general routine is to have the patient get a good



clean-out morning and night, and control any excessive coughing in the interim. The control of excessive cough is accomplished by the opium derivatives, Heroin and Codeine, and by inhalation. Severe night coughs that disturb the rest of the patient are treated by morphine grains 1-8 hypodermatically. I am sure that any possible harmful effects of the drug are more than counterbalanced by the rested condition of the patient in the morning. I wish to say a few words in regard to inhalation. It is routine for all moderately advanced cases to use a respirator containing equal parts of creosote, spirits menthol 20% and spirits chloroform. This is worn at convenient intervals and as often as possible. While much has been said in respect to the lack of value of drugs used as inhalants, I find that it helps my patients, and that once they have used them they are very loth to give them up. They are especially useful in the useless, non-productive cough of bronchitis associated with tuberculosis. Another factor which is of importance is the care of the uvula and pharynx. Most coughing cases develop an elongated uvula and a chronic pharyngitis. This condition is often responsible for much of the excessive coughing, especially if it be of a gagging nature. The uvula can be readily shrunk up by the application of tannate of glycerine, and the pharyngeal condition can be held in control by silver nitrate 20 grains to the ounce.

I need not mention that the patient should be instructed to practice control in matters regarding cough.

Hemorrhage I shall pass over lightly. This condition arouses both patient and physician to action, and is generally properly treated. I will simply state that it has been my experience that emetine hydrochloride in 2-3 to 1 grain doses is most efficacious in those patients who have recurring small hemorrhages. The dose is regulated by the nausea and depression of the patient.

We have now to consider the harmful effects of intoxication on the various organs of the body. We might include every tissue of the body under this heading and not be far amiss. The toxemia of tuberculosis burns up the fat, interferes with the tone of the muscle, both smooth and striped, deranges the nervous system, upsets the gastro-intestinal tract, interferes with the proper functioning of the cardio-vascular system, and liver. Here lies the great ground for the drug treatment of tuberculosis. We all try to put the fat back on our patients and restore their vigor by proper feeding and rest, but I think you will agree with me when I say that the only type of patient who really makes a permanently satisfactory showing on this line of treatment are the early cases.

I will first consider what I take to be the most important system—the cardio-vascular. The first effects of toxemia are shown in this system. The increased, unstable pulse, sweating, and low blood pressure are all signs that point to toxemia. My discussion will only consider that class of patients who come to us moderately advanced or far advanced. These cases invariably show a rapid pulse, moderate right-sided cardiac hyper-

trophy, low blood pressure, the dripping axilla, and moist palm. Bed rest is not sufficient for these cases. The heart must be helped. The vaso-motor nerves must be stimulated. My plan is to give Tincture Digitalis No. XV. twice a day until the physiological action is established. I then give Tincture Digitalis 3 min., Strychnine 1-60, and Tincture Belladonna Min. 3-8, three times a day. This mixture I keep up indefinitely, the results in most cases are more than satisfactory. The pulse is slowed and strengthened, blood pressure is raised from 20 to 30 m. m. of Mercury, the skin is tightened up, the patient stands exercise such as an examination without sweating, the heart action is improved, the first sound is sharp and clear, and the second pulmonic, which is most often accentuated before treatment, returns to more nearly normal.

Tuberculosis is mainly a chronic disease because of the avascular condition of the tubercle. We must maintain as high a blood content in the vessels surrounding the diseased area as the heart and vessels will permit. You have all seen the effect on a leg ulcer of venous stasis. You have also seen, no doubt, the benefit of posture cardiac tonics and strapping. You may rest your leg ulcer until doomsday and still have an ulcer. Correct your arterial and venous interchange and you will have granulations that will bloom like a rose. Pulmonary tuberculosis that has reached the stage of NECROSIS is lung ulcer. I would not leave this condition without mentioning the great usefulness of hydrotherapy in maintaining a circulatory equilibrium. Properly applied cold water drains the skin of a large and harmful over-supply of blood. Dilated peripheral arterioles means low blood pressure and increased heart action. Get the blood back into the large vessels where it belongs, but be sure your heart is equal to its job. Most of the benefits derived from outdoor life in circulating air is due, I believe, to the action of the colder air upon the vaso-motor nerves in the skin. The greater the difference in temperature between the air and the skin, compatible with comfort, the greater the benefit.

Before leaving this phase of the subject, I will dwell lightly on the condition of the blood itself. A blood count reveals very little in tuberculosis. Still, it is generally conceded that there is an actual diminution in erythrocytes in the blood content. I make a routine use of Iron Arsenite hypodermatically in all cases that are emaciated. This procedure certainly seems to stimulate the blood-forming tissues, and to improve the quality of the hemoglobin. One of the first organs to suffer from toxemia is the stomach. It has been well said that "a good stomach is the consumptive's best friend." This condition of the anorexia must be remedied. The treatment of marked loss of appetite consists mainly in absolute rest. Nothing else will take its place. In all cases, in addition to rest, I give dilute Hydrochloric Acid in 20 drop doses after meals and milk feeding. In all bodily conditions accompanied by exhaustion, the acid secretion of the stomach is low. Properly acidulated chyme is absolutely necessary to

stimulate active intestinal digestion. I find that patients on acid regain their appetites more quickly and complain less of what is practically forced feeding. The bowels should be watched carefully. Regular bowels to a patient generally means that the bowels move daily without regard to the number of times, consistency or amount of odor. My standby in intestinal stasis is Cascara in sufficient sized dose to get results.

Salines should be avoided, as they tend to deplete the serum content of the blood, with a consequent loss of anti-bodies. Patients with foul stools that do not readily clear up on mild intestinal stimulation are given a daily high colonic irrigation with Ichthyol 2 drams to the gallon. The change in the condition of a patient having several foul, loose movements daily is very often most gratifying. We sometimes see patients who complain of an almost constant desire to go to the stool. I use Tincture Belladonna in this type, and find that I get results. This condition is due, I believe, to intestinal ulceration, with subsequent scar formation, interfering with a normal passage of the bowel contents. Belladonna tends to relieve spasm and enlarge the caliber of the intestine.

I have not taken into consideration any of the concurrent diseases with which the patient may be afflicted. Neither have I attempted to exhaust the *Materia Medica*. My sole desire has been to draw attention to the fact that in treating the tubercular, we should treat the patient and not the disease.

#### DISCUSSION.

**Discussion by Dr. A. H. Williams:**—Dr. Wilson's is a hard paper to discuss, because everything he said one must agree with. It is a helpful thing to have a review like this, and go over the things we do for our patients, because we all feel sometimes the helpless sensation that we are doing nothing. I think it is often well to sum up and see how much we are doing. I would like to add one suggestion to the paper in regard to the treatment of anorexia, and that is to put the patient entirely on liquid diet which requires no chewing and is easily assimilated. This will relieve some anorexias, which are simply mental conditions arising from the monotony of diet; this monotony is very difficult to get away from either in a sanitarium or in a private home. These patients have little else to think about besides their food, and if we pay some attention to variety of food and to making it attractive, we will have less anorexia.

**Dr. Wilkinson Discussing Dr. Wilson's Paper:**—It seems to me this is a most excellent paper and we have all listened to it with a great deal of interest and profit. The medical profession is not alive and it is not strange that it is not alive, to the use of electro-therapeutics in tuberculosis, as well as other subacute and chronic conditions. Our medical colleges have not taught this form of therapy in the past. The Postgraduate Medical School at Harvard University now has a chair of electro-therapeutics, occupied by Dr. Frank B. Granger. That being the case, it seems to me that I need make no apology for bringing this matter before our Society. A recent number of the *Journal of the A. M. A.* gives nearly a column of comment on the work of Kupferle and Bacmeister working under a subsidy from the Koch foundation, who have been treating rabbits with the X-ray after inoculating them with tubercle bacilli. They report brilliant results. Also Bacmeister reports ten latent cases of lung tuberculosis which have completed their course of Roentgenotherapy, all clinically cured. Three cases had been in his sanatorium for fourteen, eight and five months, but the tuberculosis had progressed until the Roentgen treatment was applied. That *Journal* will not give any space to the men in this country who are working along that line with brilliant results, and that is true not only with regard



to the X-ray, but of all branches of electro-therapy. Any article written abroad commands some attention, but any article written in this country cannot secure their attention. That has changed somewhat in the last year or two. Dr. J. D. Gibson of Denver, during the past fifteen years, has been very successful in treating tuberculosis and I have been following his work for the past six years and have visited him several times. I am convinced that he gets more results in four weeks than we, as a rule, get in four months. He will use everything that Dr. Wilson has suggested, in addition to the X-ray. His treatment consists in raying the chest every other day and on alternate days giving static treatment. Dr. Yates of Florida for the past five years has contended that pellagra is a disease of metabolism, and while that is not altogether proven, I believe it will be proven, and he has been curing most extreme cases of pellagra by the use of the static current. Now, if we can take a disease like pellagra and cure that with static treatment, bring about elimination, stimulate metabolism and the activity of the ductless glands, why is it not of value in the treatment of diseases like tuberculosis? It certainly has proven efficient. I also wish to call your attention to Dr. Gibson's statement, made several years ago, that the X-ray is a modified form of light ray. The physics' Nobel prize for 1914 was recently awarded Knax von Laul, a Frenchman, for proving this fact, which is a very interesting one in connection with the X-ray. Prof. Von Laul passed X-rays through a crystal and photographed them and proved that they were the same as ordinary light except that they are only one one-thousandth the length of the light rays.

**Dr. Donald Macrae, of Council Bluffs, Iowa:**—The paper of the last speaker mentions what he seems to think is a fact, that the internist is up against more of a tendency to change than is the surgeon. I wish to give a little experience to show that the surgeon is up against this same thing. Two years ago when in Zurich, Dr. Sauerbrouk demonstrated his method of taking care of early tuberculosis of the lung. He claims that it always begins in one side and therefore, as some of you may be familiar, he resects from the fourth to the ninth ribs, taking out four inches; then bringing these together in order to tighten up the chest; then he cuts the phrenic nerve in order to put the diaphragm at rest, and claims a large percentage of cures. It does not seem to me that I would want to submit to this. A few days later in London, we had the pleasure of seeing Mr. Lane work on a resection of the colon, and heard him tell us that in all cases of tuberculosis, the large intestine should be removed. I saw a complete resection of the colon in a case of tuberculosis of the wrist, the man having absolutely no intestinal symptoms, except constipation, possibly resulting from intestinal stasis. So, after all, the surgeon is up against something. Shall we cut the phrenic nerve or take out the large intestine, inject Tuberculin, or depend on the climate? In other words, if I were writing a paper, the title would be: "Where in H—l are We At?"

**Dr. Wilson, closing discussion on his paper:**—In regard to Dr. Williams' remarks on anorexia. Toxic anorexia is rather easily distinguished from a monotonous diet. We all recognize that the tubercular needs an occasional change; nothing helps a diet like a complete change of it. Personally I am not pessimistic in regard to the treatment of tuberculosis. If I were a pessimist I would not treat tuberculosis. I cannot imagine anything further from my viewpoint than a pessimistic man treating tuberculosis. We cannot cure them all, but we can help a good many. Our viewpoint at the present time, in most cases, is absolutely one of instruction. Individually we do not have the opportunity to go into the matter of prevention; that is a question of dollars and cents, and we have not got the money. We are beginning to appreciate the fact that tuberculosis can be prevented, to appreciate how tuberculosis starts, when it starts and the mode of propagation, but no private organization is in a position to undertake a campaign of sufficient importance to make it worth while. Nothing will be done in the line of tuberculosis until the Government puts its shoulder and its capital behind the wheel. In the meantime, our position is one of creating a certain amount of public sentiment. We have done that and are still doing it. One of the reasons that it seems difficult to accomplish results in tuberculosis is because we get discouraged; the other reason is that the ordinary case of tuberculosis never gives the doctor a chance. Unless the patient is under the complete control of the physician, the ordinary floating case of tuberculosis will have just about as much chance of getting well as the advanced case does. Unless the patient is willing to give the physician a chance to apply his therapeutic measures, we certainly cannot say that the doctor has had the opportunity to do his best.



## GUNSHOT WOUNDS OF THE KNEE.

BY

F. P. MILLER, M. D., El Paso, Texas.

(Read before the El Paso County, Texas, Medical Society, Sept. 4, 1916.)

The ease with which the serous-lined surface of articulations becomes infected and the consequent destruction of the endothelial layer and inevitable adhesion within the joint and the periarticular tissues, gives this class of injuries serious surgical interest.

Once we have had infection with its legitimate consequences, the perfect restoration of function, which implies the ability to bear the weight of the body as well as simple flexion and extension, is doubtful.

Given a gunshot wound through the synovial membrane of the knee in which no foreign material such as clothing or a portion of the missile has been left in the structures involved, we have a simple penetrating wound with hemorrhage into the joint. This class of cases will be rare, indeed, and the treatment should be the same as applied to a simple infection of the synovia.

The entire surface of the knee should be thoroughly cleansed as if operation was contemplated. I confess to being partial to the use of iodine in half strength solution as the final application. For a small penetrating wound the entrance and exit should be closed with a collodion dressing for the first three days. Large wounds would demand a sterile gauze dressing. The limb should then be placed in a Buck's extension appliance to relieve the intra-articular pressure, and muscular contraction. There is invariably a serous exudate and more or less hemorrhage into the joint, and this should be relieved by aspiration. This relieves the culture medium of infection and through the same needle you should inject the joint with 2 per cent. formalin-glycerine, as used by the late Dr. Murphy. (1)

This is prepared by adding ten drops of formalin to each ounce of glycerine. This should never be used until sterilized in a steam sterilizer under pressure and the solution should be twenty-four hours old to allow the formalin to dissolve in the glycerine. From two to twenty c. c. of this solution is injected into the joint, depending upon the size of the joint, and the degree of dilation of the capsule.

If there is no contra indication, I prefer to introduce the needle just beneath the outer edge of the patella. Free motion of the needle will indicate the entrance of the point into the joint. A small dose of morphine is indicated. However, if the Buck's extension is properly used, there will

not be much pain. The injection of formalin-glycerine may be repeated if fever is present, and aspiration of the joint may be often indicated for swelling. An ice bag over the joint is useful for three or four days. The formalin-glycerine solution is said to coffer-dam the lymph spaces in the joint. In the absence of fever you need not repeat the injection.

Should you delay the application of the Buck's extension a few days, there will be muscular contraction and the pain will become so great that it will require great force and an anaesthetic to straighten the limb, and will require the liberal use of morphine.

Patient should remain in bed with extension for two weeks. Passive movements and massage are now instituted, the further stay in bed depending upon the indications.

It will be rare that you find a gunshot wound of the knee in which some foreign body has not been introduced. The same general features are present but the infection is sure if radical treatment is not instituted.

An X-ray should be made in locating the bullet. A large wound of exit is not alone sufficient proof that a portion of the bullet is not retained within the joint or the adjacent bones, and the failure to X-ray such a joint may result in much embarrassment to the surgeon.

I have endeavored to inject the formalin-glycerine with a large metal syringe through the wound of exit, with the idea of forcing out small pieces of clothing through the wound of entrance, but have never been successful with such procedure.

Given a gunshot wound of the knee in which we have reason to believe that infective material remains in the joint or a foreign body is retained in the bone communicating with the joint, I would advise the free exposure by means of either the horseshoe incision going through the patella ligament or the "S" shaped incision splitting the patella longitudinally. The limb would be prepared as described in the first class of cases.

It has recently been my plan to flush these joints with the formalin-glycerine solution, using a large metal syringe, introducing the nozzle through the wound of exit and allowing the fluids to pass out through the wound of entrance. The joint comes to the operating table filled with this solution. In such a short time it can only do a minimum amount of good in closing the lymph spaces, but I am sure that this application even for a short period of time is of decided benefit in preventing infection.

The joint is now opened and all foreign material thoroughly searched for and removed, and joint cavity closed without drainage entering into the synovial structures. However, drainage is used down to the serous surfaces to drain the superficial tissues.

Theoretically the "S" shaped incision which allows the patella to be sawed through longitudinally would seem to restore the joint more thoroughly than the "U" shaped incision through the patella ligament. This last incision has given good results.

To illustrate the type of cases which are seen immediately after the wound has occurred and before infection has taken place, I present this history:

G. T. Age 14. Male.

On May 28th, 1916, while seated on a cot with knees flexed at right angle, sustained an accidental wound from a .32 caliber pistol. The bullet entered the left knee from the inner side at the lower border of the patella, passing backwards and outwards through the intercondyloid fossa and lodging in the external condyle of the femur about one-half inch from the external surface at the epiphyseal line.

Swelling from hemorrhage was present. In half an hour an X-ray was made, locating the bullet as described. Formalin-glycerile 2% was injected into the joint and an "S" incision made through the patella by sawing through the median line.

A piece of the boy's stocking was found in the joint. Slight hemorrhage in the epiphyseal line indicated the tract of the bullet on the outer side. An opening was made below this line and the bullet forced through the external opening. The synovial membrane was closed with catgut sutures and the joint filled with formalin-glycerine. The patella fascia was sutured with chromic catgut, patient put to bed with Buck's extension, drainage at the wound of entrance down to the deep fascia. There was very slight inflammatory reaction.

Patient was in hospital two weeks, then sent home and remained in bed another two weeks, then was allowed to be about on crutches and at the present time gets around with fair movement. At present he has a movement through an  $11\frac{1}{2}$ -inch arc.

Another case illustrating this type, but of a longer duration between accident and the operation, is the following case:

F. H. Age 13. Male. Messenger boy. Date, June 19, 1914.

Two days ago was accidentally shot in the right knee with a .22 caliber rifle ball. The entrance wound was directly through the patella in an antero-posterior direction. There was no wound of exit.

There was noticeable swelling. The depression on each side of the patella was absent, limb semi-flexed, and patient complained with pain on movement. Joint was injected with glycerine-formalin solution and a "U" shaped flap incision made, opening through the patella ligament and the ball found imbedded in the cartilage in the inter-condyloid fossa.

The synovial membrane was closed with catgut sutures in such a way as to bring serous surfaces evenly together, then lateral ligaments and the patella ligaments were closed with chromic catgut sutures. Two drains were placed so as to reach to the serous membrane but there was no drainage directly into the joint.



The limb was placed in a plaster paris splint, which remained in place for a period of three weeks. Buck's extension was not applied for the first few days and the patient suffered considerable pain. Febrile reaction was slight and there were no other symptoms of inflammatory reaction. Slight movement was now permitted. At the end of four weeks patient was permitted to go about on crutches. At the end of six weeks the case was dismissed with movement of  $11\frac{1}{2}$ -inch arc.

About three months later, in trying to jump upon a moving bicycle, he received a fall with fracture through the junction of the upper and middle third of the shafts of the femur, and was kept in plaster with traction for about six weeks, when he was dismissed and resumed work with a fairly useful limb.

Some four months later he was killed by Villa soldiers in Juarez.

To illustrate cases in which infection has occurred, the following is of interest:

Edward Ochoa. Age 6. Male. Date, February 12, 1916.

Sixteen days previous was accidentally shot in right knee with a .32 caliber rifle ball. The wound of entrance was through the external lateral ligaments, then passing through the articular surface of the tibia. The wound of exit was about one and a half inches below the inner side of the head of the tibia. The bullet then passed through the left tibia and fractured the left fibula about three inches below the left knee joint.

This case had been treated with a gauze drain pushed through the wound of entrance to the wound of exit. Infection had taken place in the right knee joint. The swelling was so great as to make the limb almost uniform in diameter with the thigh. Patient had a temperature of 103 and pulse 120, with a history of chills, fever and sweats.

Patient was removed to hospital, the joint opened freely by "U" shaped incision, cutting transversely the patella ligament, and the joint freely irrigated with normal salt solution. Pieces of the clothing were found free in the joint and the serous surfaces were rough and inflamed and erosions in the cartilage had taken place.

The wound was closed in the usual manner with drains down to the synovial membrane but not projecting into the joint, and through these drains glycerine-formalin was injected. Drains were freely placed above and below the articular surface where periarticular abscesses were found. Buck's extension was applied and the limb placed upon a posterior splint.

There was considerable febrile reaction. The joint was aspirated and formalin-glycerine injected. This was repeated every day for three days and then aspiration for two days and the formalin-glycerine again re-injected. Ice bags were used over the joint. The infection in the joint subsided. However, a deep popliteal abscess developed which required



drainage. Patient remained in hospital three weeks and was in bed at home about another three weeks.

There is some movement in the joint at this time, but the periarticular inflammation is responsible for most of the scar tissue restricting movement.

In conclusion:

*First.* These wounds produce one of the severest accidents that can happen to a patient, and the surgeon should take due precaution to prevent infection in the joint cavity.

*Second.* Conservative treatment is permissible if the punctured wound leaves no foreign body in the joint. This means aspiration with injection of formalin-glycerine, Buck's extension, and the use of ice bags and opium.

*Third.* X-ray should be used to locate foreign bodies of a metallic nature. The possibility of the joint being infected from clothing should not be overlooked. This class of cases requires free opening and examination of the knee joint. This treatment to be followed by injection of formalin-glycerine, aspiration, Buck's extension, and ice bags.

*Fourth.* Cases which have been long infected should be freely opened and foreign bodies removed, formalin-glycerine injected and aspiration. No drains should be placed in the synovial cavity, but carried down to serous surface. However, good drainage into the periarticular structures should not be overlooked.

## CHRONIC EMPYEMA OF MAXILLARY SINUS. OPERATION BY INTRANASAL ROUTE.

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BY

JOHN J. McLOONE, M. D., Phoenix, Ariz.

(Read at the 25th Annual Meeting of the Arizona State Medical Society, Phoenix,  
April 27th, 1916.)

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Notwithstanding the fact that in the past decade, the diagnosis and treatment of diseases of the other nasal accessory sinuses has undergone a marked evolution, maxillary sinusitis is of still more frequent occurrence than affections of its fellow sinuses. This is accounted for by the fact that in empyema of the antrum of Highmore there is one more etiological factor to be considered, namely, the close proximity of the alveolus and the roots of the teeth to the floor of this cavity.

It was formerly thought that all infections of the antrum were of dental origin. There is a wide diversity of opinion as to the percentage of cases of maxillary sinusitis that can be traced to an abscessed tooth or a diseased alveolar process. Hajek claims that only 8% can be attributed to this cause, while Tilly would place the number at 100%. Skillern's estimate of approximately 20% to 30 % of antrum infections being due to diseased teeth, is perhaps more closely in accord with the experience of rhinologists. We know, too, that a diseased antrum may be the causative factor in a dental abscess. Skillern observes that maxillary sinus empyema may result from a diseased tooth, not only by direct continuity, but also through a periostitis, through the circulatory system or from a circumscribed or diffuse otitis of the alveolus.

The most frequent cause of infection of this sinus is by direct bacterial invasion through its ostium, from the nasal mucosa. The normal opening of the maxillary sinus is far removed from the sinus floor and is partially occluded by the anterior portion of the middle turbinate. Anotomically, therefore, the antrum of Highmore, having once become the seat of a purulent process, lends itself favorably to pus retention.

Maxillary sinusitis is generally unilateral, sometimes bilateral, rarely there is pansinusitis. I shall briefly report a case that came under my care about a year ago, in which the entire accessory sinus system on one side of the head became involved as a result of purulent inflammation of the antrum.

Patient, miner by occupation, age 46. History of nasal discharge extending over a period of six years. Said that he had some dental work done on teeth of upper jaw several years ago. Was frequently obliged to blow a large amount of pus from nose. Large accumulations of purulent matter in post-nasal space, especially in

morning. Feeling of dullness and neuralgic pains, referred to supraorbital region. Dizziness upon stooping, subjective sense of fetid odor.

Examination showed left nares almost entirely occluded by a markedly deviated septum. Pushing septum to one side by means of a long Killian speculum, a large quantity of foul smelling pus was seen in the middle meatus.

Ethmoidal region showed polypoid degeneration. Second bicuspid and first molar tooth diseased. Antrum punctured with a Krause trocar, washed with saline solution, and a large quantity of foul smelling pus and cheesy detritus evacuated. Marked tenderness over frontal sinus led me to suspect involvement of this region, and patient was referred for X-ray examination. Skiagram showed a diseased condition of all the sinuses on the same side, as the affected maxillary cavity. X-ray findings were later confirmed clinically. Radical intra-nasal operation of the antrum together with removal of diseased ethmoidal cells and correction of deviated septum resulted in a cure, thus establishing the diseased maxillary sinus as the chief etiological factor in this particular case of pansinusitis.

Subjective symptoms in chronic empyema of the antrum are not so marked as in the acute form. Pain may be moderately severe, but is rarely present in the antrum alone. The pain is intermittent and neuralgic in character and is often referred to the supra-orbital region. There is frequently a feeling of fullness and tenseness of the head on the affected side. Percussion over the malar process or in the infraorbital region will usually elicit tenderness. Killian believes the pain to be due not only to involvement of the trigeminal nerve endings, but also to the direct irritation of the main trunks. Disturbances of olfaction, taking the form of complete or partial loss of the sense of smell or of a subjective bad odor, are frequently noted in the chronic cases.

The chief objective sign of antral empyema is the appearance of pus in the middle meatus. The purulent secretion is present in greater abundance in the morning, due to its exit through the normal ostium while patient is in the recumbent position. Hyperplasia of middle and inferior turbinates and septal mucosa, is a frequent result of their contact with the irritating secretions.

It is as a rule not difficult to diagnose a case of empyema of maxillary sinus. Pus in the middle meatus does not necessarily mean that it comes from the antrum. It may come from the anterior ethmoidal cells or frontal sinus. Trans illumination and skiagrams when properly interpreted are valuable aids, but by no means infallible. Fortunately we have always at our command a very simple and harmless procedure, namely needle puncture of antral wall, beneath the inferior turbinate, which will give us positive information as to the presence or absence of pus in the cavity.

#### *Treatment:*

Should the condition be caused by a carious tooth our first step in line of treatment is clearly apparent. The diseased tooth should be taken care of by a competent dentist, meanwhile frequent irrigation through opening in naso-antral wall should be practiced. If the pathological changes in the sinus mucosa have not progressed too far, washing out the antrum through an artificial opening will often effect a cure. On the other hand, if the

case is of long standing and the normal sinus mucosa has been replaced by a fibrous overgrowth of connective tissue, or if hyperplastic or ulcerative changes having taken place, an operative procedure more or less radical in scope is indicated.

It has been customary among rhinologists to adopt conservative measures first, and then if a cure is not effected to make use of more radical operative procedures. The Krause operation whereby the anterior end of the inferior turbinate is removed and a small opening made in antral wall, is perhaps the most frequent operation performed intra-nasally. The objection to this operation is that it does not permit of inspection of the antrum or of completely eradicating the diseased processes that may present. The following operation which I shall describe, makes possible the opening of the maxillary sinus by the intranasal route and permits of inspection of the entire cavity by anterior rhinoscopy. The main points in the technique were first evolved by Camfield with a later modification by Ballenger, namely, the preservation of the inferior turbinate intact.

The consecutive steps are as follows. The mucous membranes of the inferior turbinate and nasal antral wall is swabbed with a twenty per cent. solution of cocaine. A few minims of two per cent. cocaine with adrenalin are injected underneath the periosteum of the canine fossa. Incise the mucous membrane over the whole extent of pyroform angle down to the floor of the nose. The mucous membrane of canine fossa and nasal antral wall is elevated, lifting the inferior turbinate toward the septum. The antrum is now opened at the pyroform angle by means of a chisel or electric trephine. Sufficient of the bony wall is removed with the rongeur forceps. If the inferior turbinate is found enlarged and hyperplastic I remove same to an extent that will insure a permanent communication between the antrum and nose. The easy inspection of the entire cavity is facilitated by the use of a short Killian speculum. Hemorrhage is controlled by the use of gauze saturated with adrenalin. Subsequent treatment will depend upon the condition of the interior of the sinus. If the mucous membrane has undergone polypoid degeneration it will be necessary to curette same. Iodoform gauze is used in first packing and left in place for two days, afterwards gauze saturated with compound tincture benzoin will effectively relieve the edema and promote healing.

I have performed this operation several times during the past two years with very gratifying results. It possesses certain advantages over the external operation in as much as it can be done under local anesthesia and in a comparatively shorter time. The danger of infection from the mouth, necessitating a long course of after-treatments, is avoided. It permits of direct inspection as well as a thoroughness in eradicating any diseased process that may be present, which was formerly only possible by the combined internal and external operations.



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ADDRESS OF THE PRESIDENT OF THE EL PASO COUNTY  
MEDICAL SOCIETY.

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BY

DR. JOHN W. TAPPAN

(January 8th, 1917.)

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It has always seemed to me that the President's annual address to the Society might be read with better effect at the last meeting of the year, or one near the last, at least, rather than at the first over which he presides, for, as the year goes on, he will have gained much valuable experience and will have in hand knowledge whereof he may speak. As custom wills it otherwise, I am reading this address tonight at the first meeting over which I have the honor to preside, and am making a few suggestions which I hope may be approved by the Society.

In looking over former presidential addresses I find that the suggestions that I am about to make have all been made before at one time or another, so I claim no brief for originality. Some of these suggestions have assumed concrete form; as a result the Society has in its own rooms a library of some 5,000 volumes, the *Bulletin* has been merged into a representative *Journal*, and advances have been made all along the line.

It seems to me, however, that the rapid growth of the Society now justifies a modern up-to-date building with offices arranged as we want them, with a meeting hall, club rooms and library on the top floor. Such a proposition has been suggested. It can be carried out in one of several ways. The plan Dr. Hugh Crouse had in mind was one, and I think a good one. Another is that suggested by what has been done in other cities. I am assured that a guaranty of fifty physicians signing up for offices will be all that is required to secure us a building on a site approved by us with plans of our own making. In other words we can get what is called a Class A building planned by ourselves on a site approved by us if fifty doctors will guarantee to rent office room in it when completed. There are also our good friends Roberts-Banner to consider. They might put us up such a building on similar terms—they could if others could.

But whatever methods are employed to gain the end in view must rest with the Society. I earnestly recommend the matter for your serious consideration. There will be many obstacles to meet and overcome but the gain will be worth the trouble. I shall work, with your approval, for a home for the Society of which we shall be proud and which we *must* have eventually. We have already outgrown our present bounds both for a meeting place and for library space. During Dr. Carpenter's administra-

tion the number of volumes in the library has doubled. He has taken great interest in it, and, together with Dr. Wesson, deserves much credit for the excellent showing we can now make with our library. Dr. Carpenter put in an index for us and he tells me that while an attendant librarian was present from May to October, 1916, the library was well patronized. It seems to me that, with an attendant present, our library would be worth much more to all of us—members as well as visitors, and an attendant is certainly necessary to look after it.

In regard to the business of the Society, the time has arrived for an Executive Committee. We waste much time at our meetings in the discussion of business which might well be pre-arranged for us by such a committee. The committee on the revision of the Constitution and By-Laws has the matter in hand, but, if the Society approves, I should like to appoint such a committee until the revised Constitution is adopted. I would suggest that such a committee might consist of the President, Vice-President, Secretary-Treasurer, the Chairman of the Board of Censors and the Chairman of the Committee of Public Health and Legislation. It could transact all business, subject to the approval of the Society, and avoid much profitless discussion at the regular meetings.

The President has, according to the By-Laws, the appointment of two committees—one on Public Health and Legislation, the other on Program and Scientific Work. I do not know what, in the revision of the Constitution and By-Laws, will become of the Committee on Program and Scientific Work, as one of the members of the revising committee tells me he is in favor of "cutting it out." Their work, he says, has usually devolved upon the Secretary-Treasurer, and he can see no good reason for continuing an inactive committee. I believe that this committee should continue with the addition of the Secretary-Treasurer as a third member. Its work is very important and should be done. If the committee will become more active it should be of much help in lessening the burdens of the already overloaded Secretary-Treasurer.

These two committees, Program and Scientific Work, (consisting of Drs. W. L. Brown and Pickett) and Public Health and Legislation (consisting of Drs. Wesson, Jamieson, and Brunner), will be continued with the same personnel during the year if the members will continue to serve. I do not understand that I have to re-name the other committees appointed by my predecessor, but if I do, I should like to make it plain that all committees are hereby re-appointed. To the Library Committee (consisting of Drs. Vance, Miller, and Wright, with Mr. Primm and Mr. Dudley), I wish to add the name of Dr. Carpenter.

In regard to the time of meeting, I wish to start at a given hour promptly—whether this hour be 7:30 or 8:00 I leave to the Society—but let us start promptly at the time set on the cards and adjourn at 10:00.

As regards the scientific program, the order, I think, should be (1) clinical cases, (2) papers and discussions, (3) clinical reports and (4)

pathological specimens after the discussions. I know of nothing more discouraging to paper writing than having one's paper crowded to a hasty finish by long clinical reports, and I shall endeavor to adhere to the subjects in order as stated above.

I also wish to call attention to that part of Chapter II of the By-Laws which says that "crisp papers and discussions and reports of cases shall be arranged for and encouraged and tedious and profitless proceedings and discussions shall be avoided as far as practicable *and no member shall speak more than once on any subject.*" It seems to me that this section should be enforced in our meetings. I cannot do much without your loyal support and help. I therefore ask this and crave your indulgence for the shortcomings I may have.

Finally I wish to say that a beloved character has passed from among us. Dr. Kluttz has lived his life—a life of devoted and painstaking effort. A truer, better man never lived, and he died, as he lived, a patient, noble gentleman. A committee has been appointed to draw up resolutions of condolence to be sent to Mrs. Kluttz, and a floral tribute to his memory was sent to the grave in the name of the El Paso County Medical Society. May he rest in peace.

## LYMPHADENITIS OF THE MEDIASTINUM.

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BY

DR. M. P. SCHUSTER, El Paso, Texas

(Read before the El Paso County Medical Society, April 17, 1916.)

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Mrs. J. V., 28 years old, Mexican, married fifteen years, has borne six healthy children, of which the third died at the age of three years. The rest of them are alive and well; the oldest 13 years old, the youngest 10 days, when patient was last seen by me. In the last child-bed she was attended by a Mexican mid-wife, and was normal so that patient got up on the fifth day. Up to that time and previous to her confinement she felt perfectly well, with the exception of a slight cough, to which she paid no attention and which she remembered only on close and searching inquiry. But on the following day, the sixth after her delivery, suddenly a big swelling developed over the upper part of the sternum, the lower part of the front of the neck, and the supraclavicular fossa, accompanied by high fever and severe cough.

I saw the patient on February 8th. She was found in a half sitting position, with distressed facial expression, slightly cyanosed, breathing rapid and wheezy, both on in- and expiration, nostrils flaring, temperature 103°, pulse about 130, small and fluffy. Soft oedema over the upper part of the sternum and on both sides of it, in the jugular fossa and the supraclavicular fossae. In the region of the insertion of the sternomastoid muscles on both sides a lump about the size of a hen's egg; the skin over the lump not adherent and of normal color. No tracheal tug; laryngoscopic examination revealed a pale mucous membrane, no displacement or narrowing of the trachea, visible almost down to the bifurcation, normal motion of the vocal cords on singing and breathing, the voice weak, but not hoarse.

Percussion revealed in front an area of intensive dullness all over the breastbone overlapping the same to the right about two fingers' width; a little less to the left and merging into the dull area of the heart; heart sounds normal but weak, the pulse slightly unequal in the two radials. The breathing was wheezy, on auscultation harsh, almost tubular in the upper part, decidedly muffled further down; the cough paroxysmal and unproductive, a little glary mucous excepted. Abdominal organs normal; lochia scanty, no complaint of any kind concerning pelvic organs; no lumps higher up, nor in the axillary or inguinal regions. Liver and spleen of normal size.



Patient sleepless; patient given codeine for alleviation of cough and hydragryrum inunctions for the absorbent effect.

On the 21st an incision was made over the lump at the sterno-mastoid insertion, which has become somewhat pasty of feel and slightly reddened; a small amount of pus and black blood was evacuated, drainage tubes introduced. The following day the temperature dropped to 101.6 degrees and patient felt somewhat relieved, but the cough was unchanged. For about a week the condition remained the same.

On the first of March temperature 101.4 degrees. Another incision is made two fingers in width above the first and a half ounce of pus evacuated; drainage.

March 5th temperature 100.2 degrees, pulse 120, weak. Subjectively better, but complained of persistent cough. Swelling over left clavicle less but over the right clavicle increasing. An incision on this side produced a little pus and blood, drainage tube introduced deep into the friable tissue. The following day slight discharge.

On March 11th an X-ray picture was taken showing as follows: On the right side of the breast bone a dense shadow, about three fingers in width, reaching from the third rib to the dome of the diaphragm, and running parallel to the vertebral column. Apex as well as rest of the lungs on this side perfectly free. Over the sternum a dense shadow continuous with the right shadow and extending into the left apex, down to the third intercostal space. In the lower region of the left lung several dense foci.

During the following week the temperature fluctuated between 100.2 and 101 degrees, the pulse between 128 and 140. An X-ray treatment was given over the upper half of the sternal region (2 caloms).

March 22nd excision of a piece of tumor from the left side and the tissue sent to Dr. Waite for examination, who reported lymphoid tissue in state of inflammation and edema. The patient's condition becoming more unfavorable, was finally sent to the hospital on the 28th of March with a temperature of 102 degrees and a pulse of 140.

A blood examination showed 3,322,666 red corpuscles and 11,200 white. A differential count shows polynuclear neutrophiles 60, polynuclear eosinophiles 19, mastcells 1, small lymphocytes 2, large lymphocytes 3, megaloblasts 2, Mononuclears 13, Haemoglobin 80%, Poikilocytosis.

Urine examination: Reddish brown, clear, specific gravity 1020, acid, no albumen, Trommer test shows some greenish brownish discoloration, Indican strongly positive.

Another X-ray treatment was given over sternal region (2 caloms).

A physical examination made on April 2nd revealed large moist rales with vesicular breathing all over; the area of dullness in front considerably reduced, respiration hardly dyspnoeic any more. Patient was able to lie with the head lower than before, temperature between 100 and 101, pulse came down to 120. In spite of this she felt weak, had little appetite, vomited frequently, especially medicines. No sweats. Sputum stained

with carbolfuchsin and methylene blue, showed no t. b. bacilli, but diplococci and staphylococci in abundance, also a few chains of streptococci.

Three more pictures taken in the second week of April showed shadows of irregular outlines about three fingers in width to the right of the sternum down to the diaphragm, to the left the heart area was covered by heavy shadows and almost the whole left lung seems to be covered or invaded. It seemed to me, judging from the percussory and auscultatory findings it must be mostly overlapping. The sternal articulation of the left first rib presented an eroded appearance.

A Pirquet proved negative. On April 17th some free fluid in abdomen, frequent evacuations and vomiting; patient deaf and extremities cold.

This brings the history of the case down to date. Now the question of diagnosis comes up. The location of the dullness, the dyspnoea, the swelling, the X-ray picture, point to the anterior mediastinum as the seat of the disease. Aneurysm is easily excluded. Tumors, benign or malignant not so easily. although the sudden onset of symptoms speaks in a general way against tumors, it does not entirely preclude them. One of my patients, a more than usually active, strong boy died suddenly with respiratory symptoms and a post mortem showed a sarcoma of thymus origin sheathing the roots of the big blood vessels and extending over the pericardium. E. Boinet (in Broardel & Gilbert *Traité de Médecine*, Vol. VIII, p. 286), says of mediastinal tumors: "They have at their outset generally an almost silent period and manifest themselves only by vascular phenomena, caused by compression of the underlying arterial and venous trunks. Later under the influence of the progress of the malignant tumors and the secondary lymphnode involvement the nerves and the tracheo-bronchial frontal plane become affected. Their invasion into the mediastinal ganglia and the surrounding areolar tissue increase the number and intensity of the pressure symptoms. \* \* \* \* These nerves and respiratory symptoms can come up quite suddenly in certain forms of tracheo-bronchial lymphnode involvement."

In this connection it might be of interest to quote what this author, who has made an unusually exhaustive study of the normal and morbid anatomy of the mediastinum and especially of the complicated system of the lymphganglia has to say about certain groups of them.

"The pretracheal and bronchial nodes on the right side form a group more important than on the left and are more especially subject to hypertrophy and degeneration. They occupy the angle between the trachea and right bronchus and are continuous with the right tracheal nodes and the chain accompanying the internal mammary vessels; they lodge in the recess between the angle of bifurcation of the upper vena cava and the lower concave edge of the right subclavia, etc."

These facts may have something to do with the earlier radiographic appearance of the shadow on the right side in the present case.

In the course of his minute description of the various groups and chains and their manifold anastomoses Boinet says of the peribronchial groups, that they are lodged in the angles of the bronchial ramification down to their fourth divisions, which suggests the route by which the pathologic process seems to have, in my case, advanced into the lung parenchyma.

However, the great suddenness of the outbreak and the fever, and the simultaneous appearance of the lump on both sides of the sternum are decidedly against the probability of a neoplasma in the ordinary sense of the word. Besides, primary neoplasmata in this location are decidedly much rarer than secondary ones, and we have no knowledge of a primary focus in this instance. The blood pictures also point more to diseased functions of hematopoietic apparatus.

Assuming, then, disease as contrasted with neoplasma of the lymphatic apparatus of the mediastinum, what is the most probable etiology? Lues may be dismissed. The woman has borne six healthy children in quick succession and gives no history of previous illness. There was sudden onset and high fever, also breaking down of inflamed lymphatic glands. Tuberculosis has greater probability, but we cannot demonstrate a primary focus in the lungs or any other organ tributary to the mediastinal lymphatic apparatus. Still, Rilliez-Barthez, among older authors, says that in one-eighth of the cases of tuberculosis of the mediastinum, no primary focus was found post mortem. Of newer ones, I quote Warthin (in Osler, Vol. II, page 743), who says: "Tuberculosis of the bronchial nodes may be primary, the bacilli either passing the lungs without exciting lesions there, or they are brought to the nodes through the thoracic duct. Secondary involvement occurs in tuberculosis of the lungs, cervical nodes, vertebrae, ribs, sternum, clavicle, mammary glands, etc." "Some writers hold that the entrance of tubercle bacilli into the lymph in any part of the body may cause tuberculosis of the bronchial nodes. Bacilli taken through the intestinal mucosa without producing any lesion in it may be carried through the thoracic duct and through the lungs to excite first in the bronchial nodes the characteristic lesions of tuberculosis."

Further, he describes a large complex of symptoms similar to those described in the foregoing history of the present case and mentions among the possible terminations perforation into the various neighboring organs, caseous pneumonia, general miliary tuberculosis and tubercular meningitis. Here again the demands of a strict diagnosis are not satisfied. Simple lymphadenitis may be left out of consideration in view of the malignant and progressive character of the trouble and the absence of a primary focus. It cannot be denied, however, that parturition may have supplied some infective agent without any noticeable local lesions.

Hodgkins' disease might be thought of, but the separate non-inflammatory character of the lump, their absence from the sides of the neck,



axilla, etc., makes this improbable, although cases confined to mediastinum are mentioned by writers on the subject.

Lymphosarcoma, a tumor arising from the lymphoid tissue of the lymphnodes and first shown to be a distinct pathological entity by my teacher Kundrat, cannot be excluded. Sometimes it is a localized growth, sometimes it spreads in the alimentary canal and involves the serous surfaces. Its superficial lumps show an infiltrating and immovable character, as in the present case, where the excised piece shows some muscular tissue, probably from the sterno-mastoid, and the lately developed bowel trouble and some free fluid in the abdomen makes some such infiltration probable. The apparent malignancy is also in favor of this diagnosis. Kundrat says lymphosarcoma is more malignant than any carcinoma; even thorough extirpation of the first lesion would not give the patient any reprieve, the invasion goes on without any stop. Our microscopical examination has not given any pathognomonic findings, and so the exact diagnosis will be a matter of post mortem, towards which the patient seems to be drifting very rapidly.

P. S.—Death took place on April 18th. The post mortem revealed infiltration of the mediastinal glands around the bronchi extending to the oesophagus and posterior pericardium; lungs free except at hilus. The free fluid in the abdomen noticed during the last few days of patient's illness proved to be a sero-fibrinous exudate. Pelvic organs normal. The microscopical findings proved the lesions to be tubercular. The process seems to have advanced from mediastinum into the lungs.



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ANNUAL MEETING OF THE ARIZONA MEDICAL ASSOCIATION

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The next annual session of the Arizona State Medical Association will be held in Douglas on April 18th and 19th. This is the first time since 1912 that the convention has been held in the southern county, and a record breaking attendance is expected. The personnel of the Association is as follows:

President:—Dr. Robt. Ferguson, Bisbee, Ariz.

1st Vice-Pres.:—Dr. W. Warner Watkins, Phoenix, Ariz.

2nd Vice-Pres.:—Dr. F. T. Wright, Douglas, Ariz.

Secretary:—Dr. C. E. Yount, Prescott, Ariz.

Treasurer:—Dr. R. D. Kennedy, Globe, Ariz.

Councillors:—Dr. E. R. McPheeters, Clifton; Dr. R. F. Palmer, Mesa; Dr. W. H. Bucher, Kingman.

Committee on Public Policy and Legislation:—Dr. W. Warner Watkins, Dr. W. A. Holt and Dr. F. T. Wright.

Committee on Scientific Work:—Dr. E. W. Adamson, Dr. J. I. Butler and Dr. Roy E. Thomas.

Committee on Public Health and Education:—Dr. R. N. Looney, Dr. R. E. Herendeen, Dr. W. V. Whitmore, Dr. C. T. Sturgeon and Dr. E. S. Godfrey.

The Association of State, County and City Health Officers of Arizona will meet in Douglas on Monday, April 16th and the Arizona Association for the Study and Prevention of Tuberculosis will meet there on Tuesday, April 17th.

A proposed innovation for this meeting, is a golf tournament, in which the members of the Association and visiting guests will be eligible. The crack players of the various country clubs of Phoenix, Tucson, Bisbee, Douglas and El Paso are doctors, and an interesting tournament can be held. The elegant course of the Douglas Country Club will be available for this purpose.

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A HOME FOR FEEBLE-MINDED IN ARIZONA.

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In passing a bill for the establishment of a colony and home for feeble-minded in Arizona, the legislature of that State, now in session, would take an advanced stand among the States of the Union. Such a bill has been presented by Mrs. Pauline O'Neill, member of the lower House from Maricopa County. The bill has the endorsement of the Maricopa County Medical Society and the Legislative Committee of the Arizona

State Association. It is carefully drawn, with the assistance of Judge R. L. Stanford, of the Superior Court of Maricopa County, and it would be a credit to this State if it should pass.

A recent authoritative survey of the State revealed the fact that we have over a thousand children of school age who are so feeble-minded that the teachers in the school could state positively that they are so afflicted. This percentage is no larger than that of any other State, and every state should have such a Home.

The day has passed when an intelligent community can, without shame, ignore the existence of feeble-mindedness and continue to punish where they should teach, make outcasts of those whom they should house and train, turn loose on society those whom they should segregate and treat with consideration.

W. W. W.

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### CONSERVATION OF VISION

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Through the influence of Dr. Ancil Martin of Phoenix, who is the Arizona member of the National Committee for the Conservation of Vision of the American Medical Association, several worthy bills have been introduced into the Arizona State Legislature. These have for their object the co-operation of the school authorities and teachers of the State in reporting promptly to the State Health Department, cases of defective vision. These bills have the endorsement and support of the school authorities and, if passed, will immeasurably aid the work of this Committee in this State.

W. W. W.

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### NEWS AND PERSONALS

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Dr. Henri Letord, of El Paso, was chosen President of the Southwestern Dental Society, at its recent meeting. Dr. E. J. Alger, of Albuquerque, N. M., was elected first Vice-President, and Dr. J. M. Ridley, of El Paso, second Vice-President. Dr. R. H. Gudger, of Silver City, New Mexico, was continued in his office as Secretary-Treasurer. Forty-five dentists attended the convention.

Dr. W. C. Kluttz, City Health Officer, of El Paso, died January 4th, 1917, aged 39 years. He graduated from the University of North Carolina, in 1895, and received his doctor's degree from the University of Pennsylvania, in 1899. He was an interne in Blockley Hospital, Philadelphia, for two years, and later did post-graduate work in Germany. A wife and two small children survive him. Dr. Kluttz was an earnest

student of medicine, a judicious and painstaking physician, and a man of sterling worth. He had the respect and admiration of all who knew him.

The following are the newly elected officers of the El Paso County Medical Society for 1917:

President, John W. Tappan,

Vice-President, J. M. Richmond.

Sec.-Treas., Paul Gallagher.

Board of Censors: W. R. Jamieson, D. W. Detwiler.

Milk Commission: H. Thompson, T. J. McCamant.

Associate-Editor, Southwestern Medicine, G. Werley.

Business Manager, Southwestern Medicine, B. E. Galloway.

Jas. Vance and F. P. Miller to serve on the Board of Trustees of the new medical journal.

Dr. J. W. Laws of Lincoln, N. M., was on professional visit to El Paso on February 4th.

Dr. G. H. Moody, of the Moody Sanitarium, San Antonio, Texas, was in the city visiting on a short vacation.

Dr. T. J. McCamant has been appointed county health officer of El Paso County.

Dr. B. M. Worsham has been appointed to the police commission of El Paso.

El Paso Chapter of Red Cross association held a rally on February 8th at the First Christian Church, which was very largely attended, all the seating capacity of the church being taken up and others turned away. Major General John J. Pershing was principal speaker. The El Paso Chapter hopes to increase its membership to 5,000 within the next few months.

Dr. Hugh Crouse and Miss Maud Austin of El Paso were married in Los Angeles the first part of November, 1916, going from there to the Hawaiian Islands to spend their honeymoon. They returned to El Paso on December 12th.

Dr. G. N. Thomas has resigned as county physician of El Paso County.

Dr. O. E. Brown, division surgeon of the El Paso & Southwestern, at Tucumcari, N. M., was on a professional trip to El Paso during February.

Dr. H. James of Phoenix was a visitor in El Paso on February 12th.

Dr. C. M. Hendricks made a professional trip to Kansas City, Feb. 9th.

The spring program of the Maricopa County (Ariz.) Medical Society is as follows:

Feb. 27th.—The Medical Expert:—Dr. Win Wylie. New Theory of Bronchial Asthma:—Dr. O. H. Brown.

March 3rd.—Typhus Fever:—Dr. F. H. Redewill. Treatment of New Growths by the Dessication Method:—Dr. W. H. Sargent.

March 10th.—Toxic Amblyopia:—Dr. D. F. Harbridge. (Not Announced)—Dr. A. H. Williams.

March 17th.—Inspection of School Children:—Dr. J. M. Pearson. Subacromial Bursitis:—Dr. G. E. Goodrich.

March 24th.—Roentgen Diagnosis of Non-Tuberculous Diseases of the Lung (Lantern Slides.)—Dr. W. W. Watkins.

March 31st.—Care of Infants:—Dr. Marian Williams. Nasal Reflex Neurosis:—Dr. McLoone.

April 7th.—Tuberculous Infection:—Dr. R. R. Brownfield. (Not announced):—Dr. O. E. Plath.

April 14th.—Roentgen Diagnosis of Appendicitis and Cholecystitis (Lantern Slides):—Dr. W. W. Watkins.

Among the recent additions to the medical fraternity of this Society are the following:

Dr. Geo. E. Goodrich, formerly Assistant Surgeon to the Detroit Copper Co., of Morenci, and well known throughout Arizona, after endeavoring for two years to content himself in Illinois, has returned to this State and located in Phoenix, where he will engage in the practice of surgery.

Dr. Kimball Bannister, after two years internship in Cook County Hospital, has located in Phoenix where he will be associated with Dr. R. W. Craig.

Dr. Orville H. Brown, formerly Assistant Professor of Medicine of St. Louis University, has located in Phoenix, where he will confine his practice to internal medicine, being associated with Dr. W. O. Sweek.

Dr. S. D. Whiting has been placed in charge of the United States Indian School Sanatorium at Phoenix. Dr. Whiting is thoroughly prepared for his work, among qualifications being eighteen months spent with Dr. F. M. Pottenger at Monrovia, Calif.

The only medical man in the Third Arizona Legislature is Dr. Ray Ferguson of Patagonia, who is a member of the lower house from Santa Cruz County.



The McKinley County, New Mexico, Medical Society has named the following officers for the ensuing year:

President, Doctor A. H. DeLong, Gallup.

Vice-President, Doctor W. B. Cantrell, Gallup.

Secretary, Doctor William Hutchinson, Gibson.

Treasurer, Doctor J. M. Boyle, Gallup.

Delegate to State Society, Doctor C. J. Laffin, Gallup.

Censors:

Doctor Dwight Allison, Gallup, 3 years.

Doctor A. C. Pratt, Gallup, 2 years.

Doctor W. B. Cantrell, Gallup, 1 year.

The Bernalillo County, New Mexico, Medical Society recently elected the following officers: President, Doctor J. C. Cipes, Albuquerque; Vice-President, Doctor F. F. Fadeley, Albuquerque; Secretary, Doctor F. E. Tull, Albuquerque.

The Dona Ana County Medical Society has elected the following officers for the year 1917: President, Doctor R. E. McBride, Las Cruces; Vice-President, Doctor J. N. Minetree, Las Cruces; Secretary-Treasurer, Doctor T. C. Sexton, Las Cruces.

The next annual meeting of the New Mexico Medical Society will be held in Las Cruces in the fall of 1917.



# Southwestern Medicine

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VOL. I.

El Paso, Texas, March, 1917.

No. 3

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## EDITORIAL.

### COUGH AS A REFLEX FACTOR.

This is an important subject, because cough is one of the most troublesome and frequent conditions from which patients seek relief, and because we so frequently see patients having an annoying cough with no apparent cause in the chest, pharynx, or larynx.

"Cough is a reflex action caused primarily by some irritation of the sensory fibres of the pneumogastric nerve, or due to mechanical irritation. It has for its object the removal from the air passages of obstructive or irritating materials. It may be excited by the irritation of nerves when there is nothing to be expelled." (C. C. Eves.)

"Cough, as a symptom, is of such frequent occurrence and is diagnostic of so many varied conditions that its study is both necessary and interesting to the student physician. The majority of coughs are due to causes outside the lungs; in fact, 90 per cent of all coughs are extra-thoracic in character." (O. F. Baerens.)

While some writers consider all coughs as reflex in character, the consensus of opinion appears to be that coughs are both direct and reflex.

G. M. Spohn, writing in 1908 on the subject of cough, said:

"Coughing is generally caused by some irritant in the region of the distribution of the pneumogastric nerve. The irritation may be direct, as the inhalation of dust upon the laryngeal mucous membrane, or reflex as the touching of the ear drum."

Further, the same writer said: "The cough center is in the medulla oblongata, near the respiratory center. All the impulses, whether afferent or efferent—passing between the brain and cord—must pass through the medulla. Coughing is controlled by the pneumo-gastric nerve and its plexuses. The origin of the vagus is in the floor of the fourth ventricle, passing out of the skull at the jugular foramen and down on each side of the neck. It sends branches to the ears, pharynx, larynx, pleura, trachea, lungs, bronchi, heart, stomach, spleen, pancreas, liver and intestines. It receives branches from the spinal accessory, facial, hypoglossal, and anterior branches of the first and second cervical nerves. It assists in forming the pharyngeal, laryngeal, pulmonary, esophageal, and cardiac plexuses. It is both a nerve of sensation and motion."

Emil Mayer says in his excellent paper on "Some Unusual Causes of Cough" that Thompson has named fourteen varieties of useless coughs, and Mayer adds:

"The discovery of the sources of these reflex coughs is by no means easy, and the fourteen causes must have many sub-divisions of a hydra-headed nature which arise to harass the investigator. The literature is abundant, and there are those among the more recent writers who still maintain a purely neurotic theory despite all that has been said to the contrary. It cannot be gainsaid that these pressure coughs do their mischief in a direct manner, pressing as they do upon some nerve filament, which in its turn conveys the sensation to the pneumogastric."

Among the causes of reflex coughs the following have been cited: Hepatic, or "liver cough," gastric disturbances, producing the so-called "stomach cough," cardiac aneurism, tobacco heart, edema of the glottis, uterine and ovarian disturbances, growths of the larynx, foreign bodies in the ear, hypertrophy of the lingual tonsil, and elongated uvula, retained secretions in the crypts of the faucial tonsils, umbilical hernia, intestinal worms, pregnancy, cardiac asthenia, mitral stenosis, mitral regurgitation, and follicular pharyngitis.

Dr. Emil Mayer, from whom we have already quoted, cites numerous cases of reflex coughs as recorded by various writers, among them being Babcock with five cases of reflex cough; Warner, whose "paroxysmal, hacking cough of children" was due, in the author's opinion, to an unbalanced central nerve action, since the children had a "normal temperature and the physical signs of healthy lungs;" A. A. Smith, cases of cough due to umbilical hernia, swallowing a peach stone, intestinal worms (two of tape-worms), the use of the galvanic battery, pregnancy, etc.; and Ward's case of cough caused by undigested casein.

Mayer also refers to a writer who, in examining patients for reflex cough due to auricular irritation, found forty-two cases of such cough in two hundred subjects. He quotes the following:

"Foreign bodies cause most trouble, as, for instance, dried cerumen, and these reflex symptoms are often grave enough to simulate severe disease."

He also quotes from a French writer: "The existence of a reflex cough is often forgotten in practice, and, from a theoretical point of view, the subject of lively controversy."

Mayer adds: "The symptoms of this condition are so very apparent that it may generally be stated that a persistent, dry, and hollow cough, without the usual antecedents of acute trouble, failing to yield to treatment in a reasonable space of time, and where, moreover, the physical signs fail to disclose any pulmonary complications, is, without doubt, reflex in origin, and the search for the cause must be thorough and persistent."



In conclusion he says: "There is another class of reflex coughs, where no excitant case can be found, and where the neurotic element largely predominates, as in neurasthenia. In these the cure depends upon the treatment for the neurosis. The differentiation between a reflex cough of a nervous origin and one due to pressure can only be made by a thorough examination. To recapitulate, we may conclude that a cough is reflex in origin:

1. "When it is spasmodic, practically constant, without expectoration and rise of temperature.
2. "When the physical signs of pulmonary disease are absent.
3. "When it persistently resists all medication.
4. "When the general health remains comparatively undisturbed, and
5. "When upon removal of the cause it promptly ceases."

*R. B. HOMAN.*

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### HAY FEVER

Apropos of the work being done by the American Hay Fever Prevention Association, through its research department, the writer undertook recently to determine which of the so-called Hay Fever producing weeds mentioned by Scheppegrell (*Journal A. M. A.*, Vol. XLVI No. 10, 1916) are to be found in New Mexico. With the aid of the head of the Department of Botany of the Agricultural College of New Mexico, the following were identified:

1. *Rumex obtusifolius* (dock).
2. *Plantago lanceolata* (plantain).
3. *Phalaris intermedia* (Canary grass).
4. *Xanthium Strumarum* (cockle-bur).
5. *Sorghum halepense* (Johnson grass).
6. *Ambrosia trifida* (giant ragweed).
7. *Ambrosia Artemisiaefolia* (common ragweed).
8. *Iva ciliata* (moist elder).

With the identification of these weeds and the knowledge that their pollen is most likely a factor in hay fever production, physicians attending hay fever patients will do well to enquire into the proximity of these weeds to the dwelling places of the sufferers.

In this issue we publish a paper on hay fever by Doctor Carpenter of El Paso, Texas. In this mention is made of the extreme rarity of hay fever among negroes and Mexicans. This calls to mind a statement made by Woodruff in his book on "The Effects of Tropical Light on White Men," (pages 91 and 92):

"The effect of light in causing sneezing is a well-known phenomenon whose mechanism is not known by any means. There are reported, in addition to this, observations by a Massachusetts doctor, who suffered from hay fever, that somehow strong light brought on the attacks just as in the case of sneezing of normal people. He is said to have succeeded in warding off his own attacks by wearing smoked glasses in the proper season and has succeeded with several patients. Hay fever is rarely, *if ever*, found except in neurotic people, who need only some such mild stimulus to cause neurosis and the report has earmarks of probability. It would be interesting to find out how many of the hay fever sufferers are blonds. By present recollection those whom I have known are mostly blonds, and there is likely to be some relation between the disease and lack of pigment adjustment."

There is much food for thought in the above statement, particularly in this arid section.

## CONSIDERATION ASIDE FROM APPENDECTOMY IN SURGERY OF THE APPENDIX.

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BY

By JAMES VANCE, M. D., El Paso, Texas.

(Read before the El Paso County Medical Society, March 5th, 1917.)

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The experienced surgeon knows that, in a large percentage of cases of appendicitis, the removal of the appendix is not all that is required to cure the patient of his symptoms. This is especially true in chronic appendicitis. In the earlier history of appendectomy, we older men especially, can recall numerous cases which after appendectomy still suffered from annoying attacks of pain and griping in the lower abdomen, similar to mild attacks of appendicitis prior to operation. These post-operative sufferers were blandly told that they had "indigestion" or "adhesions" which were believed to be an unfortunate necessary aftermath to appendectomy. Such cases we rather too frequently see even today.

These cases are more or less operative failures, and it is to the consideration of the causes of these failures that this paper is addressed. It is not the purpose of this article to discuss the numerous mistaken diagnoses, but rather to point out the causes of failure where appendicitis was correctly diagnosed.

We do appendectomy to cure our patients of their sufferings, and it is well known how numerous the complications are that may be found within the abdomen. These complications, in the majority of cases, can and must be relieved to cure the patient; therefore the abdomen must be carefully explored to find them if they exist. A free incision is necessary for exploration and for that reason we do not like the muscle splitting McBurney incision.

Through a free incision the cecum, ileo-cecal valve, the appendix, the first part of the ascending colon, and especially the terminal portion of the ileum will be exposed to view and careful study. It will be remembered that the normal terminal ileum lies in the pelvis perfectly free on its long mesentery like the rest of the small intestine. The mesentery of the terminal ileum grows shorter and shorter, and its lumen diminishes in size, as it approaches the ileo-cecal valve. At the valve the free mesentery is only from two to four inches in length, but is perfectly free, permitting a limited but free excursion of the ileum which it supports. This shortening of the mesentery and contraction of the lumen renders more efficient the ileo-cecal valve, whose apparent function is to hold back the intestinal current till the small intestine has absorbed all the nutritious solids. The liquid

intestinal contents are then poured into the cecum and colon where the fluids are absorbed and the remaining solid feces are slowly passed through the transverse colon, down into the sigmoidal storehouse to await passage into the rectum at which time it is ejected by the act of defecation.

The cecum is normally mobile to correspond to the restricted terminal ileum, but its normal motility varies very greatly and is of far less importance than the freedom of the terminal ileum.

The appendix is also normally free and mobile on its mesentery which is an addendum to the mesentery of the cecum as the appendix is an attachment of the cecum.

The terminal ileum joins the cecum at nearly a right angle, but its mesentery joins the meso-appendix at an acute angle, and it is in this little ileo-cecal fossa or pocket that most of the havoc is wrought by inflammation in appendicitis.

The appendix lying in the ileo-cecal fossa is in a most excellent position for walling off infections of this treacherous little trouble maker. Unfortunately this blocking of the infection is done by protective adhesions to the ileum or its mesentery and to the cecum. Inflammatory protective adhesions become organized and form peritoneal kinks, bands, and even extensive adhesions. The term "Lane's kink," we think, is an unfortunate one, because the majority of the adhesions are not kinks at all, but are obstructing bands which are so broad and extensive at times as to render the terminal ileum quite as fixed as the ascending colon.

We feel certain that all peritoneal bands and adhesions not excepting Jackson's veil of the cecum and ascending colon are of inflammatory origin. It is further evident that nearly all inflammations in this region are from the appendix.

Excepting retro-cecal appendicitis cases, the cecum is rarely sufficiently hampered by adhesions to interfere with its function, and as we said above cecal adhesions are of little importance compared to those of the terminal ileum.

Adhesions of the terminal ileum by interfering with its free peristalsis interferes with, and delays, the flow of the fecal current into the cecum and colon. This in turn dams back the intestinal contents resulting in stagnation and chemical change in the bowel contents and the production of toxins. To overcome this stagnation the small intestine lying in the lower abdomen resorts to increased peristalsis and the patient complains of griping pains in the lower abdomen. If the stagnation is marked, reversal of peristalsis takes place and the patient is nauseated and may even vomit. If the appendix is at all inflamed these symptoms are all intensified, because the intimate connection of the meso-appendix and the mesentery of the terminal ileum renders peristalsis of the latter impossible without pulling upon the sore appendix. This is the reason that practically



all severe cases of appendicitis, are accompanied by vomiting. In chronic appendicitis, however, the inflammation is not severe enough to cause vomiting but does cause chronic digestive disturbance.

Constipation is the rule in these cases, but not always, since we have seen numerous cases in which the bowels moved well daily, and in one case twice a day, yet there was a low grade appendicitis with terminal ileal adhesions and typical symptoms as above enumerated.

In chronic appendicitis the digestive symptoms are rarely severe, but are more annoying in character, so annoying that the patient is generally ready to submit to operation to get relief.

In operating, the abdomen is first explored, and granting that no complications such as gall stones, pus tubes, etc., are found, the ileo-cecal valve is picked up and the terminal two feet or more of the ileum is drawn out of the abdomen and carefully inspected. In some cases you will find that the ileum can not be withdrawn from the abdomen and you will be surprised to find an adhesion down in the pelvis one to two feet above the ileo-cecal valve. Adhesions will rarely be found above this point, but it only takes an instant to search somewhat higher, and this should always be done.

It is the six inches above the ileo-cecal valve which is most commonly involved, and these adhesions will nearly always be attached to the appendix or meso-appendix. Higher up they usually connect the ileum to the pelvic wall peritoneum or to the peritoneum of some point in the ileo fossa.

Free the adhesions from above down, cutting them away from their attachments so as to give a peritoneal flap sufficiently large to cover the defect on the ileum, or its mesentery, made by cutting away the adhesion. The wall peritoneum defect, made by cutting away the flap can practically always be closed without difficulty by drawing the cut edges together. The ileum should be freed to the full extent of its mesentery, exactly to the ileo-cecal valve. The adhesions will be most frequently found in the immediate vicinity of the appendix. Here the appendix can be conveniently robbed of its peritoneum to cover the ileal defect. These peritoneal flaps for covering the ileal defects should always be cut, in freeing the ileum, leaving one side attached to the ileum. This, because the graft grows better and requires less sewing in place, but where this cannot be conveniently done, free peritoneal or omental grafts serve the purpose well.

These terminal ileal adhesions will assume every conceivable form and character. Only recently we operated on a man whose chief symptoms were intestinal pains after eating, and severe obstipation. We found the terminal ileum for a distance of about eight inches, beginning four inches above the ileo-cecal valve rolled on itself, one complete revolution as you would roll a map on its holder. This was unwound, and the peritoneal defect covered with a free omental graft, because it was too large to cover with peritoneum at hand. This man has been completely relieved of his obstipation and indigestion.

After these attentions to the ileum the cecum is relieved of its adhesions if deemed necessary by cutting it away from the abdominal wall and turning it upward and inward. This is seldom necessary, however, unless the appendix is imbedded behind the cecum, when it makes it much easier to remove the appendix. When doing this all peritoneal defects must be covered with peritoneal or omental grafts.

The appendix may now be removed, care being taken that the meso-appendix stump in no way pulls or interferes with the freedom of the ileum or its mesentery.

In operating on gangrenous and ruptured appendices, as well as those cases that should have been operated two days or a week earlier, these measures just considered can seldom be carried out. And it is in just such cases that post operative troubles are most apt to occur with the best surgeons. When cases are operated on in the first twenty-four hours, during which time all cases should be operated, all these details are quickly and easily carried out and they can generally be done even as late as forty-eight hours. Later than forty-eight hours these details can seldom be attended to.

In cases which require drainage, the drains should be placed to the outer side of the cecum, when expedient, to keep the drainage tract away from the terminal ileum, because dense adhesions of the ileum will result.

The bowels should always be moved early because early peristalsis so induced tends to prevent the formation of adhesions.

If these suggestions are always borne in mind and carried out where practicable we believe the results in the surgery of appendicitis will more nearly approach a practical perfection.

## THE KANAVEL TUBE, A VALUABLE ADJUNCT IN THE AFTER-TREATMENT OF ABDOMINAL SURGERY.

BY

F. W. NOBLE, M. D., Tucumcari, N. M.

(Read before the 3rd Annual Meeting of the Medical and Surgical Association of the Southwest, El Paso, Texas, December 7, 1916.)

Some few years ago Rehfus devised a new stomach tube, that consisted of a heavy slotted egg-shaped ball connected with a flexible rubber tube of small caliber. This instrument was designed to avoid the discomforts of introducing the large calibered Ewald tube, and also aimed to furnish a tube that could be introduced into the stomach and remain there an indefinite time. By this Rehfus was able to make those fractional tests of the stomach contents, that have changed many of our former ideas of the physiology of the stomach and assisted us so materially in the diagnosis of stomach diseases, especially cancer of the stomach.

Some years ago I was greatly impressed by the wonderful effects of lavage in the hands of Dr. A. J. Ochsner, in stopping the pain of biliary colic and appendicitis and also with the great value of lavage in bringing about a decrease in the mortality. Dr. Ochsner effectually demonstrated that, if the stomach was kept empty allowing nothing at all by mouth, opiates were unnecessary in these painful conditions. Before Ochsner, Grosser passed a stomach tube through the nasal passages and let it remain in certain cases of vomiting.

In June of this year, I noticed that Dr. Kanavel, Assistant Professor of Surgery in Northwestern University, had seized upon the Rehfus tube as a splendid means to accomplish the results of Dr. Ochsner, without the discomfort of passing an Ewald tube and without the necessity of repeatedly passing a stomach tube. Dr. Kanavel, because in an unconscious patient the Rehfus tube could not be swallowed, devised a tube that was divided thirty inches from the metal ball and at this point was connected with another tube twenty-five inches long. To pass this tube, this connection was unscrewed and a stylet of piano wire with a small bulbous distal end was inserted into the distal portion of the tube in the manner of a stylet in a soft catheter, to furnish enough rigidity to pass the slender tube to the stomach. Next he found that in the regular metal ball of the Rehfus tube the slots were of such length that the stylet would pass out of the slots and so injure the oesophagus or stomach; so he replaced the Rehfus ball with one of his own design, consisting of holes and slots which prevented the escape of the stylet and he had a small depression made on



the inside of the metal ball to receive the end of the stylet. After introducing, the stylet is removed and the tube held in place by adhesive plaster to the chin and cheek of the patient, as we used to fasten the thread from an intubation tube.

The uses of this tube are evident. It will prevent acute dilatation of the stomach and be a valuable resource in the treatment of paralytic ileus, gastritis, toxemia and peritonitis. These and persistent vomiting can be treated by repeated washings at stated intervals. The lavage water may be medicated if necessary. I usually use a solution of sodium bicarbonate, except when using the tube for lavage the outer end is kept in a basin and covered with fluid. In patients from whom we are withholding everything by mouth, the patient may be given the satisfaction of a drink of water and this can be at once aspirated. After using the tube in a patient for a few days, the patient's absorption of liquid food may be tested for, by giving such food in small amounts, and if subsequent suction demonstrates proper absorption, then these amounts may be increased and thus feeding will be resumed at the earliest moment. Dr. Kanavel mentions a case of peritonitis which was apparently moribund. The tube was kept in the stomach of this patient four days and the patient did not vomit after the treatment was begun. Since June I have needed the Kanavel tube in several cases and I am crediting the Kanavel tube, as being the deciding factor in getting two of these cases well.

#### *Case I.*

Mrs. C. L. O., a housewife, referred to me by Doctor J. P. Boggs, entered Tucumcari Hospital on August 28th, 1916, suffering from a bullet wound, the bullet having entered the abdomen about five inches to the left of the navel and almost two inches below it, the direction of the bullet being backward and to the right. She had come to the Hospital in an automobile over twenty-seven miles of rough road. The abdomen was opened shortly after her arrival and seven perforations of the intestines found, two of them in the descending colon, the remainder in the smaller intestine, and occurring at widely scattered places. Several perforations of the mesentery had caused a plentiful hemorrhage. The mesentery was repaired and the bleeding stopped, the holes in the bowel were then sutured with silk. Before she left the table, the Kanavel tube was introduced and her stomach thoroughly washed. As soon as she reached her bed the Murphy drip was started by rectum. She complained of nausea and vomited a green fluid at seven next morning. Her stomach was then washed with soda solution and she at once expressed herself as feeling much better. The stomach was again washed at four p. m. and at eight p. m. and eight next morning and at four p. m. and at eight p. m. This lavage three times a day was continued until September 3rd at 10.00 p. m. and entirely prevented further vomiting, made the patient very comfortable after each lavage and seemed



always to be of use in helping the patient to pass flatus. Flatus was nearly always passed in quantity shortly after the stomach was washed.

### *Case II.*

Mr. W. H. T., a rancher, aged 38, entered the Tucumcari Hospital October the 27th, 1916, complaining of soreness in the right lower quadrant of the abdomen. His family history was negative. He had had slow fever, measles, pertussis, and rheumatism in the left hip for three months, six years ago. His present pain began on Sunday, October 22nd, five days ago, and was intense Monday night. He vomited on Thursday night and Friday morning he had a sweat and was chilly. He was suffering from general peritonitis. An appendectomy was performed at ten p. m. and suppurative appendicitis found. After the operation his stomach was washed and the Murphy drip was started as soon as possible. He vomited at three-thirty in the morning, a clear fluid and complained of much pain at eleven a. m., and at twelve noon I introduced the Kanavel tube because of the vomiting and tympany and washed his stomach. He vomited once after this and he continued to expel green fluid through the tube at intervals. There was a paralytic ileus, which responded to the lavage, compound enemata and pituitrin in one C. C. doses at four hour intervals. The Kanavel tube was removed at eight p. m. on November 1st, 1916. The patient made a good recovery, although it was necessary to re-operate upon him during convalescence for a pelvic abscess, arising from the appendicitis about 3 weeks after the appendectomy.

### *Case III.*

Mrs. W., a housewife aged 51 years, came to the Tucumcari Hospital on Nov. 12th, 1916, with a strangulated hernia, which had existed at least forty-five hours. She had repeated vomiting and severe cramping pains, when not under the influence of an opiate. A physician had chloroformed her and performed taxis under chloroform; but was unable to reduce the hernia. He only succeeded in most thoroughly mashing that strangulated bowel by his efforts, in fact the anesthetic enabled him to injure the bowel much more thoroughly than the patient would have permitted had she been awake. So soon as we could prepare the patient and ourselves, we did a herniotomy and found a gangrenous small intestine. This I dropped back into the abdomen and waited eight minutes and then re-examined it to note any change in regaining vitality. One gangrenous spot remained and I attached a silk thread to this part of the intestine to identify it later and dropped it back into the abdomen. Then I did a typical herniotomy. Next I entered the abdomen by means of a low median incision, brought up the damaged intestine and resected about six inches. Then the abdomen was closed except for a large rubber drain in the lower angle of the median wound. The patient's stomach was washed and the

Kanavel tube left in the stomach. She was also given 1 C. C. of pituitrin hypodermically at four hour intervals. Lavage was also carried out at four hour intervals and she had a brown fluid stool on the afternoon of the thirteenth. Her temperature was 99.2 and her pulse 80 on the fourteenth and she had passed quantities of flatus and had had three large brown colored stools. Everything appeared to be progressing favorably until the morning of the fifteenth, when the nurse came to me and said that while she was raising her up the patient complained of feeling very badly and that her pulse had gone up to 140. I saw her at once and saw that she was having a large embolus pass through her heart. Her relatives were summoned to the bedside and she passed away about four hours later, evidently from the embolus. The Kanavel tube in this last case did all we expected it to do and added greatly to the comfort and well being of the patient.

## THE NOMENCLATURE OF TUBERCULOSIS.

BY

W. W. DILL, M. D., Albuquerque, N. M.

(Read before the Bernalillo County, New Mexico, Medical Society,  
February 21st, 1917.)

Phthisiology is as old as medicine itself, for consumption is spoken of in the books of Leviticus and Deuteronomy. Yet, as a science, its youth and vitality are shown by its shifting views and unsettled terminology. These last may be due partly to the polymorphism of the disease which is becoming better understood; and partly to the intellectual polymorphism of the medical profession—which can never be understood.

The Turban Schema for classification of Tbc. patients considers two factors: (1.) The amount of involvement and (2) its severity. As usual, there are three grades; one, two, and three. This scheme to be sure is quite arbitrary and anatomical, and has little prognostic value. But it has one great advantage. It side-steps an immense amount of criticism, by omitting descriptive terms as "incipient" and "advanced," also constitutional symptoms and complications. It speaks more pathologically than clinically.

The American Classification, that of the National Association for the Study and Prevention of Tb. and of the American Sanatorium Association, revised in 1913, aims to be more descriptive and helpful and is the best ever officially produced. However, it is apparently not yet so venerable and classic that it may not be touched by rude hands. Consequently, every author feels duty bound to take a whack at it. Perhaps it gets into difficulty mostly by trying to describe cases both clinically and pathologically at the same time. Besides speaking of the minimum amount of involvement of the lung, it attaches a descriptive title, such as "incipient"; and enumerates such clinical data as "slight or no constitutional symptoms, \* \* \* elevation of temperature, or acceleration of the pulse, \* \* \* expectoration. Tubercle bacilli may or may not be present."

Perhaps it is this word "incipient" which has given the most offense. Yet how could we get along without it? It is euphonious and handy. Every patient who discovers he has phthisis likes to think, "It is incipient. I can be cured." So the popular literature says. And so the official classification used to say, until 1907 when it dropped the word "favorable" as prognosis of the first stage. But what is an incipient case? Incipient means beginning. In any given case of Tb., what do we know about how or when it began? We think most likely in childhood. The patient does not know. But all this is from the pathological point of view. Clinically, when the manifest disease or phthisis began is a very different matter.

The patient can tell usually when he began to be unwell. But he might have been incipient pathologically twenty years or more before being incipient clinically. So to be clear, we must distinguish between the whole Tbc. process beginning with the primary infection, when it was "incipient *tuberculosis*," and the manifestation of actual disease, usually years later, when it is "incipient *phthisis*." Fishberg, in his recent work on Pulmonary Tuberculosis constantly makes this distinction: The difference between the *infection* and the *disease*. In a personal communication, Dr. Pottenger says: " 'Incipient Tb.' should never be applied to early clinical Tb. in the lung \* \* \* I speak of early Tb. of the lungs, or any other organ, not as incipient, but as 'metastatic infection.' I characterize that condition which we have been speaking of as 'incipient Tb.' as 'early clinical Tb.' meaning Tb. when it shows the earliest clinical symptoms." In his latest book on "Clinical Tuberculosis" which Pottenger has just published he insists upon these conceptions. What he calls "early clinical Tb." Fishberg has called "incipient phthisis." Both men avoid the term "incipient Tb." in a clinical sense. Dr. Geo. H. Evans of San Francisco has said, "It is inconsistent to plead for exact methods in diagnosis, based on a more accurate knowledge of the underlying pathology, and retain a nomenclature as misleading as the term 'incipiency' when applied to clinically demonstrable active Tb." (1.)

But, call the first stage what you will, what kind of cases belong to it? The official schema places acute cases in a class by themselves. Fishberg thinks that "Abortive Pulmonary Tb.," "Fibroid Phthisis," "Pulmonary Tb. in children" and "Phthisis in the Aged" also deserve separate classification. To chronic phthisis he describes only two stages, incipient and advanced. Perhaps he reasons that it is unktion to the breast of a patient to know that he is incipient, so that should be retained; but it is damnation to find out he is far advanced, so that term should be dropped. Certainly the two advanced stages often merge into each other quite imperceptably. This author thinks that many people not at all sick, or those with collapse induration might have more signs and symptoms than those given for the first stage. He objects to lumping together the active, inactive, and abortive cases in the same stage. It seems to me questionable to use the term "early" as Ritter and others (2) advocate instead of "incipient" since that introduces the time element, while the first stage usually signifies a limited amount of involvement and disability which may continue more or less stationary for a long while just as the other stages may. To use "primary" or "grade I" as European authors do, would seem to avoid some of these difficulties. How should one classify a healed third stage lesion in one lung, with an active first stage lesion in the other? Clinically, first stage; pathologically, third stage? Take another case for illustration. A patient of mine who had been pursuing a benign fibroid course with hemoptyses but negative sputum for several years was assailed by the *Bacillus of Friedlaender*. Soon after, activity was increased and tubercle bacilli began to



appear in the sputum in large numbers. At once I felt that her status and future course had become considerably altered, which subsequent events proved. Yet she would have been classed in the second stage right along. This would tend to show that fibroid phthisis deserves separate classification. But to extend the subdivisions indefinitely, as some do, separating as varieties the arthritic, diabetic, nephritic, alcoholic, syphilitic, hemorrhagic, bronchitic, bronchiectatic, pleuritic, etc., would seem to introduce unnecessary complication. To speak of a pre-tuberculous stage of Tb. can only be a pathological misnomer and absurdity, to my mind.

Some say the first stage is earliest recognized by auscultation, some say by percussion. Some say if at all clinically recognizable it is no longer incipient. Some say if there are bacilli or râles, it is no longer incipient. The official classifications admit both to the first stage; and, amid the tumult and the strife, the official schema goes serenely on. One may take it or leave it.

Many question the validity of speaking of "cures" in Tb. At first, in classifying results, the National Association used the word "cured" without qualification. In 1912 the Committee on Nomenclature, moved by a burst of frankness, reported that "it is most difficult to say who is cured and when the cure is arrived at." Consequently patients have imbibed the idea that there is no cure for them. Perhaps in the pathologico-anatomical sense no cure does exist—implying *restitutio ad integrum*—any more than in small-pox. But surely we may speak of clinical cures a plenty, if we consider only abortive cases which have passed for severe colds, and also the lung scars found at necropsy in those who have died of something else—a very large proportion of all adults. Some have said Tb. is the most curable of all chronic diseases. Counting in osseous and glandular forms, there should be no doubt of this. However, in view of the relative quality of immunity and of the possibility of recurrence, it is well to be conservative and speak of "apparent cure" as we do, where there has been active phthisis. But patients should be given an explanation.

This brings us to the consideration of the word "active." In a recent book we read, "A larger proportion of active cases remain quiescent for one or two years." The author might have meant one of two things. Either, though clinically active, the cases remain stationary—that the processes of repair and destruction are evenly balanced. Or, though pathologically active and ulcerating, they are clinically and symptomatically quiescent. Here again is the difficulty in trying to talk clinically and pathologically at the same time without specifying. A case cannot be clinically active and clinically quiescent at the same time, any more than a patient may be dead and still smoking a cigar. A case may be more active, less active, progressive, regressive, or stationary. Pottenger says: "This term (active) is wrongly confined by most writers to cases which are showing clinical symptoms of the toxic group. By study of pathology, we know that the disease may be active over long periods of time and yet the patient be free from

toxic symptoms." Here he uses the word in a pathological sense. It might be questioned whether it *should* be used as a pathological term to signify infiltration, catarrh, ulceration, etc. If, as most authors do, we restrict the word to clinical uses, it should include not only toxic symptoms, such as fever, tachycardia, languor, etc.; but *all* clinical evidences, such as positive sputum, moist râles, hemoptysis, etc. A Tbc. patient presenting any of these symptoms or signs should be considered clinically "active." To be considered clinically "quiescent" all these should be absent, in my opinion. If the word "active" be used at all in a pathological sense, it should be "so nominated in the bond." The term "quiescent" is sometimes used to denote slightly lessened activity. If one were to say "less active" in such a case, no misunderstanding need arise.

Then it seems to me it would be well to distinguish between "latent" and "quiescent" and not use them interchangeably. Before a childhood infection has ever become manifest, we would speak of it as "latent." After an active case has become inactive we would speak of it as "quiescent." Before activity, latent; after activity, quiescent.

When patients are spitting more or less bloody sputum, how often do they dispute with the physician if they hear him call it a hemorrhage. "Hemorrhage" doesn't sound good to their esthetic ear. The medical dictionary defines hemorrhage as any escape of blood, even by diapedesis through intact vessel walls. (3.) But, for the peace of mind of the patient, which is part of the treatment at such a time, it would be better to call it hemoptysis or blood-spitting. Even the etymology of the words would favor that usage.

The words "tubercular" and "tuberculous" come to mind. As much as ten years ago the National Association plead with us to give up the word "tubercular" in relation to "lesions or conditions caused by the tubercle bacillus." But evidently many find it a task too hard for one lifetime, like the taste for whiskey. It comes too handy. Then it was understood that "hospitals" were for the segregation of far-advanced Tbc. patients, while "sanatoria" were for the more hopeful class. That injunction too is much honored in the breach.

The propaganda for the prevention of Tb. formerly worked the idea of infection so industriously that the result was the birth of that illegitimate child, phthisiophobia. To head this off will require a good deal of explanation to the laity. For instance, in Francine's book we read, (4): "It (Tb.) is not contagious in the ordinary acceptance of the term." On the other hand we read in the Von Rucks' recent book "Studies in Immunization against Tb." (p. 20.) "We do not hesitate to assert, that the protection of a nursling against Tb. infection is rarely possible in a family in which there is a person whose sputum contains tubercle bacilli, and never if this patient is concerned in the care of the infant. Even if the latter is absolutely isolated from all other rooms in the house, and is confined strictly to the nursery which is never entered by the Tbc. person \* \* \* \* \*"

Also Hamburger mentions a case where exposure of an infant for only one hour was followed by infection of a malignant type. (5.) Children are born free from Tb., but the studies of Cornet, Epstein, Bollinger, Hutinel, Bernheim and many others make it clear that pathologic infection in children stands in direct relation to the amount of exposure they receive. (6.) But clinical disease depends much more on a very different condition, that of susceptibility or lowering of immunity. Under the age of two years, infection is so sure to be disastrous that too much care cannot be taken to avoid it. To leave a wider margin for safety, some say five years. At any rate, from about this time until puberty infection is most likely to be benign; and in about 90 per cent of children it seems inevitable. Therefore, if it is usually inevitable and benign, the main point in prophylaxis would be to prevent such influences as lower resistance to endogenic infection and breaking down after puberty. The question then arises: Can those already infected be re-infected or super-infected? What is the difference between these two terms? Fishberg says the difference depends upon whether the primary lesion has healed or not. If it has healed, renewed infection would be re-infection. If not healed, it would be placing one on top of the other, super-infection. Hamburger says that since anatomical healing does not take place in Tb. all renewed infection is super-infection. Now super-infection may be either exogenic or endogenic. Koch believed exogenic super-infection impossible. More recently Roemer, Hamburger, Much and others have shown how very difficult it is to super-infect with Tb., as it is also with syphilis. (7.) Most of us believe that only exceptionally, with massive doses and lowered resistance, does exogenic super-infection take place, and that nearly all secondary infection is endogenic and metastatic, the lighting up of a latent lesion. Pottenger says, "A person who has an infection already in his body is probably protected from all ordinary inoculation coming from without, as well as most inoculation coming from within." Much says, (8) "A Tbc. organism is not susceptible to, in fact it is immune against super-infection from without." Since about 90 per cent of adults are thus infected and so possessed of immunity, the practical bearing of these facts is enormous. Shall a Tbc. patient be considered an outcast, Should he be hounded from one workshop and boarding house to another? Should a Tb. sanatorium be considered a pest house? Should a laryngologist avoid treating a Tbc. throat? What about family relations where one of the family is sick? What about sputum disinfection and room disinfection, inefficient as they usually are? A thousand such questions in relation to phthysiogenesis could be disposed of in the light of these facts, if they are facts. The infant should be removed from infection absolutely; not so others. If these views of infection are substituted for the older ones in the public mind, phthysiophobia will take care of itself.

We have seen that Tb. is primarily a pathological term denoting the whole process caused by the tubercle bacillus from the time of its entry into the body until the body goes hence. But what about phthisis? McCrea has



said: "The word 'phthisis' has fully as many meanings as it has pronunciations, and what does a medical man understand when another speaks of phthisis?" (9.) Is it any active case, one with cavitation, or one much emaciated? Fishberg prefers to use it as a clinical term denoting an active case, one sick and in need of treatment, a consumptive. Ah! there is the word we have been trying to avoid. Consumptive. The sound is too sinister. Nobody likes it. But what other noun do we have to take its place? "Tbc. person" and "Tb. patient" seem clumsy. In sanatorium language, he is a T B. The Bulletin of the National Association while it was being published, had been using Tb. as the contraction for tuberculosis, and Tbc. for tuberculous. It has also been using occasionally the word "tuberculotic" for consumptive. As a substitute for "consumptive" Dr. Dorland in a personal communication could suggest only the two French words "tuberculotic" and "phthisic." Their form is suggestive of adjectives rather than nouns, and they seem not to have had much vogue as yet, though "tuberculotic" sounds rather good. But what a constipation of English does this betoken! In contrast, note what a perfect diarrhea of words we have in some places where they are not needed. Skiagraphy, skotography, skiography, radiography, electrography, electroskiography, roentography, new photography—all mean the same thing. Pour l'amour de Michael! Why can't we get an English word to fill that cavity? Help wanted! The best I can suggest are: tuberculant, tuberculote, and tuberculent. These are attempts to contract the two words "tuberculous patient." Now let someone else try.

In conclusion, I wish to emphasize the main point in my argument, which is that we should keep clinical conceptions and pathological conceptions out of the same pew, and then employ appropriate and unmistakable terms to express those ideas. Clearness of thinking and clearness of expression always make for definite progress in any science—in none more than in medicine.

- (1) Journal A. M. A., Vol. LXVI No. 11, p. 833.
- (2) Journal A. M. A., Vol. LXVI No. 8, p. 592.
- (3) Practitioner's Dictionary, Gould, 1916.
- (4) Pulmonary Tuberculosis, Francine, 2nd Ed., p. 229.
- (5) Pulmonary Tuberculosis, Fishberg, pp. 108 and 371.
- (6) Studies in Immunization, Von Ruck, pp. 21 and 22.
- (7) Pulmonary Tuberculosis, Fishberg, p. 107.
- (8) Pulmonary Tuberculosis, Fishberg, p. 117.
- (9) Journal A. M. A., Vol. LXV. No. 2, p. 137.



## PELLAGRA IN THE RIO GRANDE VALLEY.

BY

W. F. WITTWER, M. D., Las Lunas, N. M.

(Read before the 35th Annual Meeting of the New Mexico Medical Society, Albuquerque, N. M., October 12th, 1916.)

That the pellagra situation is grave in some of the Southern States is admitted. That it may develop a similar situation in New Mexico is probable and the likelihood of such a development demands serious consideration on the part of the sanitarians and populace.

Pellagra is an old disease and has been known in European countries for many years, especially in southern France, Spain and in Italy. It has always been considered a disease of southern climate. The disease has been quite generally brought to the attention of the medical profession of the U. S. during the last decade; however, it is believed that the disease has existed here for a long time though not so generally distributed and well known. It is quite probable that many of the U. S. soldiers who were confined in southern prisons during the Civil War where they were largely fed on cornbread and bacon, and reported in the mortality list under "chronic diarrhea" died of pellagra.

Unfortunately the registration area of the U. S. does not cover the territory that contains the major portion of deaths from pellagra. The registration area is practically north of the 36° north latitude and, pellagra being a disease of southern climate, is largely south of this line. Pellagra caused 1,015 deaths in the registration area of the U. S. in 1913 compared with 368 deaths in 1910. These figures were taken from the mortality statistics, Bureau of the Census. No doubt a much higher rate of increase existed in the Southern States. Pellagra is on the increase in New Mexico and no doubt will continue at a rapid rate of increase unless some precaution is taken whereby the disease may be held in check.

*Clinical Observations.*

The pellagrins on which this report is based are all native New Mexicans and belong to the poorer class. They were all patients who applied to me for treatment and all lived in the vicinity of Los Lunas, with the exception of one who came from a ranch in western Socorro County.

Pellagra in the early stages of the disease is not readily recognized by symptoms. It is impossible to make a positive diagnosis in incipient cases because there is no known specific causative factor, therefore the diagnosis must be made on clinical symptoms which in mild cases is always subject to debate, especially if the patient tends to recovery and does not

manifest the symptoms of a well developed case. In the U. S. Public Health Service the erythema, or skin leison, has been the leading and confirming diagnostic symptom. In the cases which I have seen the first symptom is the general debility and the patient complains of extreme weakness as the essential symptom. Of these patients only one had the erythema when he presented himself for treatment.

The following reports are somewhat typical: Mrs. M. S., widow, age 48, came to the office in June, 1915, for treatment of the erythema on the hands before she considered that she required any general treatment. Pellagra was not suspected and was not recognized. The erythema was slight and not accompanied by any other symptoms and soon disappeared and the patient did not return for treatment until November 10, complaining of disorders of the nervous system. At this time the erythema was not so called either by the patient or me. On December 1st she developed the gastro-intestinal symptoms, and on Dec. 20th she developed an erythema on the upper and inner surface of the right thigh and the adjacent vulva. From November 10th to December 20th there was no erythema on any part of the body. The patient was stripped and examined each week so there is not much likelihood that the erythema escaped our attention. The patient died about two weeks later with typical symptoms of the three essential lesions; viz., of the nervous system, of the gastro-intestinal tract and the erythema, accompanied by the constant and characteristic condition of muscular weakness.

Another patient, Mrs. P. C., age 50, applied for treatment July 8, 1915. She gave a history of having had the erythema on the hands during January, 1915. She had at all times during the course of the disease typical symptoms of pellagra with the exception of the erythema which was not present at any time while the patient was taking treatment, viz., from July 8th to September 4, 1915, when she died. Another patient, Mr. J. C., age 34, a day laborer on the state highway came to the office March 18, 1916, for treatment for diarrhea. This patient had a fully developed case of pellagra including the erythema on the hands, with a sharp line of demarcation which classed it with the so-called glove-like erythema. This patient is the only one who had an active erythema when he applied for treatment. He continued to grow steadily worse with involvement of the nervous system until he developed an acute mania the latter part of May and was then committed to the hospital for the insane where he died about two months later. Another patient, Mrs. T. A., age 50, whom I was called to see April 22, 1915, gave no history of erythema nor was any present during the time of treatment. It was a typical case of pellagra with the exception of the erythema. She died October 20, 1915.

The erythema when present is mild in character, generally subsiding in the course of a few weeks. It causes very little, if any, inconvenience to the patient, so that he does not apply for treatment for this condition and, I think, it generally escapes the patient's mind later on, so that when he is

asked about the erythema, he gives a negative history. After the erythema has subsided, the skin which was involved is somewhat contracted, indurated and slightly atrophied which gives it a wrinkled and somewhat glazed dry appearance, quite similar to the hand that has been sterilized in a carbolic acid solution strong enough to give a slight burn. The erythema when present is quite pathognomonic of pellagra.

#### *Gastric Symptoms.*

The gastric symptoms in the early stages of the disease are not pronounced. In the later stages, in cases with involvement of the nervous system, the tongue is quite red, slightly contracted and fissured, with small painful ulcerations. In cases with less involvement of the nervous system the tongue is large, flaccid and coated. In a well developed case there is anorexia, epigastric heat and slight pain, and in the later stages of the disease, a persistent diarrhea which, in most cases, shows a blood tinged stool.

#### *Symptoms of the Nervous System.*

The symptoms of the nervous system are quite manifest. An ataxia which is noticeable in the walk is quite characteristic. The patient can walk with the eyes closed, can likewise stoop with no disturbance but his regular gait shows a marked ataxia. Insomnia is nearly always a symptom. No pain. Formication is present in nearly all cases and is generally an early symptom. Most patients show mental incompetency, skin anaesthesia, melancholia, giddiness, vertigo, spasms, chilly sensations, ringing in the ears and similar minor symptoms.

I have given the symptoms quite carefully because a physician who has no occasion to suspect pellagra and probably, like myself, who had never recognized a case before may be sorely pressed for a diagnosis, which was my case, and, with all due respect to my able consultants, wish to say that my first two patients died before a diagnosis of pellagra was made. Neither of these two patients had any erythema during the time of treatment, nor was it suspected, nor was any such history solicited. In cases where there is no diarrhea, which includes practically all of the incipient cases, no fever, kidneys normal, pulse practically normal, lungs normal, patients able to answer favorably nearly all the questions on a life insurance examination blank, it is no easy matter to make a diagnosis unless the physician knows and suspects pellagra. One of my consultants insisted that one of the foregoing reported cases was not sick other than having hysteria, and he promised to have the patient well and walking in ten days. I need only add that she did not walk nor did she live another month. I wish to emphasize the fact that we failed in the diagnosis in the first two cases, not because the disease is difficult to diagnose, for the very reverse is the case, but because we failed to suspect pellagra.



*Heredity.*

Three of the reported patients were sisters and are of a family of six grown people. Two were fatal cases. The three had been living, each in her own home, in the same community for many years. With this exception the patients were not related.

*Causes of Pellagra.*

The causes of pellagra are not yet satisfactorily worked out. There is one class of workers who insist that it is an infectious disease with a direct communicable infective factor which is carried in the same manner that any other infection is conveyed. There are others who have not abandoned the spoiled corn theory. The vitamin theory is also advocated by many and is worthy of careful consideration. This theory likely is not the direct cause but no doubt is a contributing cause of no little importance in pellagra as well as in tuberculosis and other nutritional deficiency diseases where the vitality and natural resistance to the infection is sub-normal and where this sub-normal condition is an essential factor in the infection and subsequent development of the disease.

The most generally accepted theory for the cause of pellagra is that advanced by Joseph Goldberger, M. D. Surgeon, U. S. Public Health Service, which is carefully written for the Journal of the A. M. A. under date of Feb. 12, 1916, in which he concludes that it is not infectious nor contagious but that it is a food intoxication and that practically the only cause is a faulty diet, unbalanced in composition and deficient in proteins, in foods of an animal source and of the legumes, especially peas and beans. The patients in the foregoing report all conform to the Goldberger idea with the exception of the legumes. These patients have had a generous supply of beans in their diet. They have about the same sanitary conditions, housing, dirt, etc., that they have had for several generations, which leads me to believe that there is likely some climatic change that is a cause in introducing this disease in New Mexico. The history of the disease shows that it is a disease of hot and southern climates. Also the erythema seems to differ in different localities, which would indicate that solar heat and light rays probably play an important part in the etiology. It also appears that the erythema is a much more constant accompaniment of the disease and a much more marked symptom in the more southernly states, as Georgia and Mississippi than in New Mexico. I therefore believe that there are solar influences as a causative factor in the etiology of pellagra. It may be that there are some special heat or light rays that have a tendency to produce this condition when the diet is such that the natural resistance to this special intoxication is below the normal standard of resistance. On the contrary, it may be that there is a deficiency in certain light or heat waves which under normal conditions furnish the required resistance or immunity to this special nutritional toxemia.



*Treatment.*

Viewing this disease as a nutritional disorder, the main treatment has been directed to the diet, not only in prescribing a generous and well-balanced diet, but one rich in proteins of an animal source, such as fresh beef and mutton, eggs, milk and butter and codliver oil. To this has been added vegetables, fruits and fruit juices and cereals ad libitum with the exception of those that have too strong a laxative tendency. The proper care requires institutional treatment with a competent dietitian in charge. Medication offers but little assistance. When there is much involvement of the nervous system, the bromides act well. When the nervous symptoms will permit, stimulating treatment is indicated. Believing that climate or solar influence is a causative factor, a change of climate should be a part of the treatment. The patient should be sent from a hot to a colder climate and to a more northern latitude.

*Prophylaxis.*

If the generally accepted theory of the cause of pellagra is correct, our only prophylactic salvation is education. The profession should do all that is consistently possible. The daily press should be urged to help in publishing reports of pellagra and especially in reporting deaths, with comment, when due to this disease. The teachers in the public schools should be instructed in the cause and prevention of pellagra as well as the fatality of the disease.

*Summary.*

This report is based on clinical histories dating from September 1, 1915, to September 1, 1916. Of these patients eight have died. No patient that has once been confined to bed has recovered. Of the fatal cases three were men, five women. Ages range from thirty-five to sixty-five. One of the eight gave a negative history regarding the erythema. No erythema was present while the patient was under treatment. All of the eight patients had the persistent diarrhea. All had the symptoms pertaining to the nervous system, although somewhat different as to degree. Four patients had melancholia of a marked type two of which later developed acute mania and were subsequently committed to the hospital for the insane. One of the patients committed to the hospital for the insane died before she was removed to that institution. Of the cases that were not fatal, two have a tendency to grow worse and will likely lead to fatalities within the next twelve months. Two patients are on the range herding sheep and have not been seen for two months. Prognosis for one of these two is not good. I have had during the time covered by this report six or more other cases that were mild in character, the patients not being confined to their rooms.

*Conclusions.*

1. The erythema is not so constant a symptom as in the more southern states. The diagnosis should have the benefit of the doubt in cases where there is no erythema present.
2. The diagnosis should be made early, before diarrhea is severe, for, in my experience, those cases have all proved fatal. If the treatment is to avail anything it must be instituted early in the course of pellagra.
3. This report conforms to the Goldberger theory in every particular, with the exception of proteins in legumes. These patients have had a liberal amount of beans, rich in proteins, in their diet at all time.
4. Certain light rays or other solar influences in hot climates are probable causes in the etiology of pellagra, or else, by virtue of an absence of some certain solar influence, the system is not able to neutralize the food toxema produced by the nutritional disturbance.
5. A change of climate should be added to the present system of treatment. The patient should be sent to a colder climate and a northern latitude.
6. When the etiology is thoroughly understood we may likely find that there is no one factor which is the cause of pellagra, but rather a resultant of forces or causes, including the present day theories, any two or more of which may be essential factors to the development of pellagra.

**DISCUSSION.**

**Dr. W. G. Hope, Albuquerque:**—To my mind this is one of the most important papers that I have heard read in the New Mexico Medical Society meetings. It indicates that our state is invaded by pellagra. Although we have had a few sporadic cases reported at former meetings, I think it was never more than one by one man and we have never considered that it is endemic in our state. The paper was very complete; I was very much pleased with it as a whole.

My own experience with pellagra has been confined to one case. About two years ago I was called to see a man, a Mexican, about 50 years of age, who came from a hundred miles west of town for treatment. I watched him for about two months. He had well marked symptoms of pellagra. I called in a few physicians here who saw him with me. He had an erythema, and had the melancholia and the general nervous symptoms. I watched him for about two months. My treatment had, I think, practically no effect on him. He returned to his home, a hundred miles west, in the mountains, and died a couple of weeks after his return.

As for the etiology of the disease, after reading Goldberger's experiments, published in the Journal of the American Medical Association some months ago, I reported my case to the local county medical society and had occasion at that time to look up the literature to some extent. At about the time I was getting my paper up, the American Pellagra Association was meeting in some town in Carolina and I wrote there to the secretary of that association, who sent me some very valuable literature on the subject. At about that time Goldberger's paper came out as a bulletin—it was issued as a Government bulletin. I followed his experiments in detail and at the time I had absolutely no doubt that his conclusions were correct. His treatment, etc., was simply to give a well-balanced diet list. He found most of his cases in the prisons of the southern states and he experimented for some months in the prisons of Alabama and Mississippi. His investigations convinced me thoroughly that his theory was correct and that the etiology

was due to an ill-balanced diet. As the Doctor told you, he treated his patients and cured a great many of them by simply changing the diet, giving them more meat and a generally well-balanced, nourishing diet.

As we all know, this disease appears among the poor and among people who are poorly nourished. My patient was a poor peon Mexican and his diet had been pretty much bread made from corn. All of these cases, if you will notice, are reported from among the lower strata of society, from people whose diet is markedly ill-balanced. I was very much pleased with the paper.

**Dr. E. L. Ward, Santa Fe:**—I would like to emphasize a few points brought out in the paper.

In regard to the symptoms, you very often get the mental symptoms of pellagra before you get any rash. For instance, I had one case who developed melancholia with delusions of persecution, and it was a month or so before she developed any rash. Also, this rash seems to be influenced by the light rays, as, for instance, an American will probably have it more on the hands, whereas a native who goes barefoot to a great extent will have it both on the hands and the feet.

In the treatment, I have used largely what I call a tbc. treatment, with the exception that I do not give them much light because the light always makes the erythema worse.

In regard to the increase of pellagra, I often wonder whether it is so much increase in pellagra as it is increase in our knowledge of it. It seems to me that there is a good deal of room for discussion as to whether we are not getting awakened to the cases or whether the disease is really increasing.

**Dr. J. W. Kinsinger, Roswell:**—My first case of pellagra I saw 21 years ago, in January or February. The case then presented some nervous symptoms, especially gastric disturbances which continued up to the time of her death and I think she has been dead probably four or five years. It was not recognized as pellagra until the severe mental symptoms developed with a diarrhea and with mania. We were far from the asylum and the case was never sent to the asylum. She was the wife of a merchant and had plenty of vegetables but I think they used very little fresh meat, principally pork, fresh pork, however, at intervals, and a great deal of bacon. They were cornbread eaters; that is, they had cornbread more often than other bread. But this case continued with erythema of the hands only each spring until the last year or perhaps less, when the erythema became more extensive. She had the symmetrical erythema of the hands, which extended halfway up the arms. In the latter part of the course of the disease, the erythema was extreme, with cracked skin and some infections and pus, especially between the fingers. At that time three or four physicians saw her, and the disease was then recognized.

I think that I lost several patients who died without the disease being recognized, Mexicans, and with no history of erythema. However, the clinical history was not sufficient for recognition because they were not recognized as pellagrous until we knew what it was, which has been, now, for a number of years.

At the present time I have a case, a Mexican woman. The family is fairly well off, farmers. She had the disease for nearly a year and of course, has now the typical symptoms of pellagra including mental disturbance, gastric, etc., with absence of erythema.

We have had reported at our county society meetings seven or eight cases of pellagra in the last five years. One of our physicians, who is probably present, has one now and is treating it, a white person; and our experience, with the exception of this one merchant's wife, has been that the cases occur among the poorer classes of people. I believe, too, that all our white cases have had the erythema after they have reported to a physician for treatment. The patients have ranged in age from that of 18 months to 72 years. The woman of 72, a white woman, was the mother of the merchant's wife, and died two or three years ago. The other cases were sporadic and the greater number of our patients have died. The majority of our cases have been residents of west and middle Texas. One woman, the mother of four children, who had always been in good health, had nothing but gastric and nervous symptoms, which were not relieved. The husband took his family to his old home in Texas and came back in less than a year with the wife buried and gave history of typical symptoms of erythema. This case, however, was recognized and that has been some years ago, six or seven years ago.

So, in conclusion, I would say that pellagra is not as new in our state as we imagine, but we have had cases which, however, have escaped recognition, for the last 21 years.



**Dr. G. K. Angle, Albuquerque:**—I enjoyed the paper very much. It was the kind of a paper that is practical and treats of something that comes up to the physicians in New Mexico every day.

It seems to me that if I drew any conclusion—I never saw a case of pellagra in my life and I am not familiar with the literature except that I have a hazy recollection of some time not long ago having read an article on pellagra—at any rate, the symptoms that the essayist gives and the pathology that he gives would indicate a central poison and a poison that had a selective affinity for the nervous system. It is mighty hard to believe that low diet alone would be sufficient to produce the symptoms that the Doctor gives for pellagra; but, at any rate, it is evident that some poison has gotten into the system which has a selective affinity for the nervous system. One man—I do not recall his name—working along that line, I believe injected thyroid extract into the spinal fluid. I am not certain about that, it is some time since I read of it, but to me that way of looking at it appealed rather strongly.

**Dr. R. E. McBride, Las Cruces:**—Just to keep the record clear is the only excuse I have for getting up. The first cases of pellagra that I remember officially reported from New Mexico were reported by Dr. C. F. Beeson, of Roswell. These cases were reported from the Rio Pecos Valley, and, as Dr. Kinsinger said, were mostly Mexicans coming from Texas. The first cases reported from the Rio Grande Valley were reported by Dr. R. E. McBride, of Las Cruces, in 1914, at the Southwest Medical and Surgical Association at its annual meeting. That report was afterwards published in the transactions of that Society, also later in the New Mexico Medical Society Journal, and it recorded in a very crude and elementary way the history of three cases. Since that time I have had six or seven more, all natives, all born in New Mexico, five of them born in Dona Ana County.

I do not know why they have pellagra. Like Mr. Cleveland's Venezuelan proposition, it is a condition that we have to combat, never mind why. The theory right now is that it is due to deficiency of protein; but to my mind the point is not so much what the cause of it is, whether it be an infectious agent, whether it come from some of the products of spoiled corn, whether it be due to some solar influence, or whether Goldberger is right in his deficiency proteid theory. The fact is that we have it and we have to meet it. Our state asylum has patients who are pellagrous. We sent a case up from Dona Ana County with all the symptoms of a homicidal mania and absolutely no other symptoms. It was diagnosed as pellagrous insanity. The man died within a short time. I am not prepared to say that it was not; I am not prepared to say that it was.

The cases that I have seen have not been confined to the native race. I saw one negro woman, a negro woman who was born in New Mexico and who had lived for the most part in Las Cruces, die of pellagra with all of the terminal symptoms. She was in the terminal stage when I saw her; I was sent there as a county official, with a view to having her committed to an insane asylum. We did not commit her because she was dying, and she did die in a few days. Another case was a young American woman of the better class, who came from somewhere in southwestern Texas, down about San Antonio. The only symptoms she had were just a little bit of a suspicious eruption on the exposed surfaces of the arms. The other cases have all been Mexicans and have ranged from very simple primary lesions to the terminal condition.

I am not prepared to stand up as an authority on pellagra, but I do believe that we ought to be a little more careful in our diagnosis.

As to treatment, of course, since Goldberger made his report from his experiments in Mississippi, experiments which, by the way, are particularly interesting whether their conclusions be correct or not, we watch the diet a little more carefully than we did before. But the thing that has given me the most satisfaction and the thing that has made me glad to see my patients out on the street later on, is to lock them up in a dark room, take them out of the sunlight absolutely, do not let them know when it is daylight at all, and if they are not too far gone—I fill them up with the hydrobromide of quinine and give them an injection of five grains of cacodylate of soda and every day if they are not too far gone it is wonderful to note the rapidity with which the symptoms clear up.

Now most of my cases—that is, those in the initial stages—have remained clear over one spring period and so far over this fall period. Whether they are cured or not, I would not want to say, but they are better. One of the stable boys is able to do his work. In that report of mine at El Paso, it so happens that one of the cases I reported was a Sister, a nun who had been very fond of corn all of her life and when she could not get the fresh article she ate the canned articles; there was scarcely a day went by that she did not have corn. Of course, in those days that



was rather suspicious; but, on the other hand, here was the stable boy who cleaned the stalls in a public livery stable and there was sufficient proof that the stable fly had something to do with it. Then there was a young woman of about 22 or 23, whose house was right on a sandhill, the winds had drifted the sand up there; and it was reasonable to suppose that she might have gotten her case from the sand flea. The point is that we do not know what it came from.

In conclusion, I just want to call attention to what appears to me to be the similarity existing between the skin lesions of pellagra and the skin lesions that we see so often in artificially fed babies, babies anywhere from two months or three months up to two or three years. We see them very frequently with this eruption all over the hands and all over the face. I throw that out of simply as a suggestion, the possibility that there may be some relationship between the faulty and deficient nutrition in these youngsters and the causative agency in pellagra.

**Dr. H. V. Fall, Roswell:**—I would like just to accentuate the remarks of Dr. McBride in which he referred to the necessity of making a correct diagnosis in these cases. I have had the pleasure of seeing several cases of pellagra at Roswell, and I well remember one to whom I was called about three years ago to see in consultation. I found a lady of about 40 years of age. She had mental symptoms that were suggestive of this condition, she had symmetrical skin lesions that were typical in appearance, she had the abdominal disturbance that characterizes the condition, and the case was so clear that I made a positive diagnosis of pellagra. That has been three years ago and I have long since been dismissed from the case. The woman has not, to my knowledge, had a recurrence of the skin lesions. She is apparently in better health than she was before that time and I do not think she has had any treatment at all. I either made a mistake in diagnosis, when the symptoms all pointed to pellagra, and she never had pellagra, or she recovered, and I do not know today which is the case.

I do know this: That where we have a little outbreak of pellagra we are liable to get a little pellagra-phobia and in that way come to make diagnosis of pellagra in cases that are not pellagra. I have seen that in one more instance down there. So I think we should be a little more careful in making the diagnosis, because it is a very distressing diagnosis indeed to make to a patient and one that should not be made erroneously.

**Dr. Wittwer, closing:**—I have very little more to add, but I should like to emphasize the point that a gentleman has made here, which is, that the diagnosis is of great importance, because our consensus of opinion has been that very few of these patients recover. As I stated in my paper, none of my patients ever confined to bed recovered. Now I have many cases that have not been reported. I had one case with slight ulceration of the skin in numerous places, the general weakness and debility and a few of the gastric symptoms and nothing else. However, it is not possible to make a diagnosis of pellagra in that case. Also I have other cases where I have diagnosed pellagra that are now recovering and going back to work; for instance, a man who was working as a section hand on the railroad track and was laid off for six months and is now back at work. Though he was unable to work from weakness, he had only insomnia, slight anorexia. I believe myself that that man had a mild form of pellagra. If it were a mild form of pellagra, the man is not cured, he is only an arrested case which probably will recur within a year or so.

Then I would like to emphasize the fact that, while it has not been generally recognized and reported, there is no doubt in my mind that it is increasing in New Mexico. I have lived in one community and my practice has been almost exclusively among the natives. However, I have checked my diagnosis by having consultation from Albuquerque and from Belen and all the physicians in the surrounding neighborhood. None recognized the first three. The first case that I recognized was one where the patient had been in June and came back in December complaining of nervous symptoms, with no erythema until about the 20th day of December, when it appeared on the inner side of the thigh and the forearm, which suggested pellagra to me. I went back, read up on the subject, and it was a typical case, no symptom missing. However, we may have had a number of other cases previously and, as the Government report states, it is quite generally conceded that the Government Indians have had pellagra for many years. Also, as I stated in this paper, it is now believed that many of the men held in southern prisons during the Civil War had pellagra.

## ACUTE CATARRHAL JAUNDICE IN CHILDHOOD.

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BY

J. A. RAWLINGS, M. D., El Paso, Texas.

(Read before the El Paso County Medical Society, November 20th, 1916.)

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This is not a very common disease in childhood, but I was led to discuss this subject before you because of a series of seven cases occurring in my private and dispensary work during the past summer and fall.

The etiology of this disease is not very clear, but like most of the inflammatory conditions of the gall bladder and ducts occurring in older persons, it is thought to be due to infectious agents. No single agent can be named, but several bacteria have been suspected and Ratchford speaks particularly of the influenza germ.

The infection many times starts in the duodenum, and is carried up into the bile ducts which in turn become more or less obstructed, thus damming up the bile and causing its absorption into the system, showing in the conjunctivae and skin, and giving the urine its foamy appearance and yellow color.

The disease occurs most commonly between the ages of two and five. It sometimes occurs in such a manner that it simulates an epidemic, two to three cases occurring in the same family, or several in one neighborhood. It may occur alike in the well or poorly nourished. These symptoms are quite uniform in my experience, and though not characteristic at the beginning, soon become so, so that one does not usually suspect anything worse than acute indigestion until the mother mentions the fact that the urine is yellow or the stools are gray, or the skin and eyes are found to be yellow.

The early symptoms are chiefly gastric, loss of appetite, with nausea and vomiting. Constipation is the rule. The nausea and vomiting are rather persistent and the child complains of more or less pain in the region of the umbilicus. This pain is persistent, but as a rule is not severe, occasionally, however, I have had to resort to an opiate (paregoric) for its relief.

There is usually some fever, but it does not range high, rarely going to 103°. The child is nervous and irritable, and if old enough will complain of headache. These symptoms of fever, general discomfort, nausea and vomiting will continue for from three to five days, then it will be noticed that the skin and conjunctiva are becoming yellow, and that the urine is foamy and saffron in color, and the stools are grayish. These latter symp-

toms confirm the diagnosis, and increase in severity for three to five days longer, when they remain stationary for a week or more, then gradually subside.

The liver is usually enlarged, and may be felt from two to three finger breadths below the costal margin. Many times itching is present, but in not so pronounced a symptom, as in adult life.

Two or three things have impressed me as being helpful in making an early diagnosis; particular attention should be given to an examination of the stools and urine when a child past two years has, what appears to be, a stubborn spell of indigestion, for by examining urine and feces one will be able to predict that jaundice is impending, and thus be able to place the child on proper treatment, and at the same time improve his standing with the family. Three diseases in particular may be confused with this trouble though some others may have some symptoms in common. These are, recurrent vomiting, acute gastric indigestion, and appendicitis. These have many symptoms in common with catarrhal jaundice, as nausea, vomiting, pain, and fever, in the early stages, but the appearance of the gray stools, yellow, foamy urine, and yellow eyes and skin, clear up the diagnosis, but until these appear, one is many times in doubt, hence the importance of an early examination of feces and urine. Then again, recurrent vomiting has very little fever, and the pain in appendicitis is more localized and the liver is not enlarged.

As indicated already, the course of the disease is from sixteen to twenty-five days, the acute symptoms lasting from seven to ten days. After this time the appetite returns and the child begins to take more interest in life, but the discoloration of skin and eyes remains for two or three weeks longer.

The disease is rarely serious or fatal, and is so uniform in its symptoms and course that, as Ratchford says, it gives one the impression of a self-limited infectious disease.

#### *Treatment.*

Kirby and one or two other authors deprecate the general custom of giving too much calomel in this disease, claiming it aggravates rather than benefits the inflammation.

During the vomiting stage, say for twenty-four to thirty-six hours, it is best to stop all food, and give an initial dose of calomel, but stop here with the calomel. If a further laxative condition of the bowels is desired, give rhubarb and soda. In fact, plain soda water, one teaspoonful of bicarbonate to a glass of water is an excellent thing to give during the stage of nausea and vomiting. As a digestive and tonic, dilute hydrochloric acid and tincture of nux-vomica act well.

Attention to diet is most important, not only during the attack but for some time after.



As recommended before, no food should be given during the first twenty-four to forty-eight hours, then skimmed milk, buttermilk, stale bread, and cereals may be given. Fats, sweets, and rich food must be avoided.

Bile is necessary to the digestion of meats and fats, hence they should not be given until the flow of bile has been re-established.

#### DISCUSSION:

**Dr. Werley:**—He suggested the use of salicylates and belladonna in the treatment of this condition. The salicylates are supposed to have some liquefying effect upon bile.

**Major Craige** likened it to Weil's disease, which has been found to be due to a spirillum or spirocheta. He asked that the members of the society permit him to look for the spirocheta in the blood of sick children, if they had the opportunity.

**Dr. Thompson:**—One of the best signs of an impending jaundice is the lusterless condition of the hair just preceeding the attack and before the jaundice sets in. The abominable odor of the stool was not sufficiently stressed by the essayist.

**Dr. Hugh White:**—In the several years of my practice, I have never seen a case of this jaundice until the last few months when I have seen four.

**Dr. McNeil:**—I believe that the condition is very closely related to acute indigestion and usually give sodium phosphate with very good results.

**Dr. Gallagher:**—I would like to suggest the use of urotropin in this condition. It is not the only drug to be used. The salicylates have a very fine place, but I believe that the addition of urotropin will hasten the recovery of all these cases very much.



## HAY FEVER IN THE SOUTHWEST.

BY

E. R. CARPENTER, M. D., El Paso, Texas

(Read before El Paso County Medical Society, November 20th, 1916.)

Hay fever, or hyperesthetic rhinitis, was first accurately described by Bostock in 1819, although other writers had mentioned the disease long before that time. Elliotson in 1839, and Blackley in 1873 claimed the disease to be caused by the pollen of certain plants and grasses. Dunbar in Germany, and other investigators elsewhere, have verified the pollen theory and have added greatly to our present knowledge concerning this trouble.

Lenox Brown in his admirable work on the nose and throat, states three factors are necessary for the development of hay fever:

1. "A predisposing neurotic idiosyncrasy, with debility of vaso motor control.
2. "A resulting chronic hyperemia of the vascular tissues, and hyperesthesia of the nerve endings of the nasal passages.
3. "An exciting agent which varies with the individual and locality. It may be the pollen of a grass, of a rose or of other flowers; or it may be certain noxious conditions of the atmosphere which are peculiar to certain seasons of the year, and certain localities and independent of any vegetable particles." True hay fever he attributes to pollen, pseudo hay fever to other exciting causes.

Dunbar in 1892 collected pollen from certain grains and flowers which he preserved, and with this material he succeeded in bringing on typical attacks in his hay fever patients at any time during the winter, while the experiment was entirely inert in people not susceptible to the disease during the hay fever season. With the same pollen extracts he injected horses and produced a serum, which when applied locally in the nose would neutralize the pollen extract, thus aborting the attack. He was also able to inject the antitoxin in the susceptible patients and prevent the customary periodic appearance of hay fever. Dunbar's treatment has been tried all over the world with varying success, some writers claim good results from its use, while others are not at all enthusiastic about it.

Since some patients are susceptible to only a certain pollen, it stands to reason the antitoxin from that pollen alone would be effective, and that the *shot gun* antitoxin so widely advertised would not cover the whole field in pollen therapy. Could we determine the exact pollen in all cases and could we eliminate the cases not due to pollen, the treatment of hay fever would be **greatly simplified**.

I believe Lenox Brown is right when he says: "The exciting agent may be certain noxious conditions of the atmosphere which are peculiar to certain seasons of the year, and to certain localities and are independent of any vegetable particles." Here in the Southwest we see a great many cases each year, and some at all times of the year. However, the majority of cases begin in May and June. At this time alfalfa and a few flowers are in bloom in certain communities, while in other distant communities there is hardly a vestige of green vegetation anywhere around. Yet hay fever occurs in equally as high a percentage in one community as in the others. practically all these patients obtain immediate relief by going to California, where alfalfa and almost every plant and flower of this section can be found growing luxuriantly.

The dust and wind cannot be an irritating factor in this country, as hay fever is less prevalent here during the windy season, February and March, than any other season. An usually high percentage of the trainmen and passengers traveling in and out of El Paso on the Rock Island trains are subject to typical attacks of hay fever while going through Kansas in the spring and summer. This is due, no doubt, to the pollen which is abundant there at that time—these cases are identical to our home cases.

Unlike many sections, hay fever here is not troublesome as a rule in the autumn, especially is this true with the new cases. After two or three years of recurrence, many patients continue to suffer the year round owing to chronic hyperplastic changes in the turbinates and to the formations of polyps in the upper part of the nose. However, at least ninety per cent of this class have some abnormality of the nasal passages, as unduly small nares, deviated septums, large spurs, or the middle turbinate pressing against the septum. These patients are readily relieved by correcting the nasal deformities and removing the hyperplastic tissue from the interior turbinate. As a rule, they have **no recurrence of the hay fever**. In this class the sensitive areas in the nose are destroyed, the neurotic element and the causative factor, whatever it may be, remaining unchanged. Antitoxin has been a disappointment to me in treating this disease, and unless it were produced by the use of alfalfa pollen, and from the wild flowers that occasionally bloom in May, its value could not be determined satisfactorily.

The typical uncomplicated cases in otherwise healthy individuals, are the most difficult to treat, the complete occlusion of the nose, the intensely itching eyes, the uncontrollable paroxysms of sneezing, the excessive secretion from the nose, the burning, dry, parched sensation of the palate, tongue, and pharynx, and the general discomfort may continue for days and nights without relief. These symptoms may disappear as suddenly as they came on, only to be repeated in a short time. Local treatment in this class is often of but little service, the patient is hyperesthetic and does not respond well to medication; at times cocaine, adrenalin and the opiates give temporary rest, while nasal irrigations may be useful. Trichloracetic acid applied to the lower turbinates will often prevent a recurrence. Internal

administration of acids and alkalies has not been of any marked value in my experience. I have not attempted immunization with pollen extract, as the experience of others along this line has not been very encouraging, and I do not know the pollen to use in this community.

Every case of apparently true hay fever in this section should be closely observed, by the attending physician. He should study the condition under which the patient is living, including the exact time of onset, whether at the patient's own home or elsewhere, and the character of the flowering vegetation in the neighborhood. He should take into consideration the direction of the prevailing wind, the temperature and whether or not the trouble is more frequently met with during a wet spring than when it is dry, as is usually the case in this community.

It is a well established fact that the actinic or white rays of the sun produce a hypersthetic rhinitis in some people while in mid ocean, and that certain individuals are unusually susceptible to an erythema of the skin from exposure to the sun's rays. As stated, hay fever is a very frequent disease in this semi-desert country, and makes its appearance at the time of year when the sun's rays are brightest, when the temperature is climbing upward and when vegetation is scarce, unless it be in certain small areas under irrigation. Practically all my patients have had their first attacks in this climate, although many of them previously lived in Kansas, Missouri, Illinois, and other states where pollen hay fever prevails. Almost invariably, patients coming here from the above states with hay fever are soon cured of the disease.

From a careful study of "hay fever" in the Southwest during the last eight or ten years, I strongly believe the sun's rays and the characteristically dry heat usually met with in May and June, are the irritants chiefly responsible for the trouble in this section. No doubt pollen is a factor to be considered, and when an antitoxin has been made from our local vegetation, better results will follow in a few selected cases.

I now have a series of hay fever patients under observation, who are to be tested during the winter and spring in a hot dry room, using intensified rays of the sun on the face and in the nose. I shall also have them experiment with red, green and other dark colored wool cotton worn in the nose. I have taken up the question with Park Davis & Co. of having an antitoxin made from alfalfa pollen, and from the yellow flowers that some times bloom on the mesa in the springtime.

When we have determined the chief irritant peculiar to this part of the country, and can offer a fairly satisfactory remedy, we will have bestowed a great blessing on this section of the country, for at times there are thousands of people here afflicted with this troublesome disease, which interferes materially with business, makes life miserable, and each season drives hundreds from our immediate community—some of them never return.

**Discussion of Dr. Carpenter's paper:**—Dr. Detwiler, Dr. Stark and Dr. Werley advocated the use of Calcil Chlorid, from the use of which they had secured good results. Dr. W. R. Smith claimed that washing out of the lachrymal sac with solution of boric or weak copper sulphate relieves the symptoms very quickly. Major C. A. Neal, of Cincinnati, drew attention to the fact that dry manure blown around might be an etiological factor. Capt. F. Kramer said that in 3000 cases which had passed through the Base Hospital at Fort Bliss, he had not noticed a case diagnosed as hay fever. Dr. H. Thompson and Dr. T. W. Grace drew attention to the fact that the disease apparently did not exist among negroes, Mexicans and Indians.



## PUBLIC HEALTH ORGANIZATION.

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BY

Senior Surgeon C. C. PIERCE, U. S. Public Health Service, 111 New Montgomery St., San Francisco, California.

(Read at the Fifth Annual Meeting of Arizona State, County and City Health Officers, April 24, 1916, Phoenix, Arizona.)

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For the past several years there has been developing what might be called "the public health movement," in which all classes of citizens are participating to an extent that would have been considered remarkable twenty years ago. This has been due largely, to the discoveries that have been made by research workers relative to the causes of disease.

This has given a scientific basis upon which sanitary organizations could work, and has reduced the application of health requirements to a comparatively simple form, removing many of the severe restrictions formerly imposed by quarantine when the exact object of the measures taken was problematical.

This change in sentiment of the general public has been paralleled by improved methods of administration by State and Local Boards of Health. An effort has been made and successfully carried out by many States to completely reorganize their Boards of Health, and thus to bring their work into harmonious relationship with that of other States, and with the health work of the National Government.

The changes have also resulted in increased efficiency, in that the real object of sanitary work, prevention of disease, has occurred, and is proven by the reduction in the number of deaths resulting from most of the preventable diseases.

The National Government participates in general public health work to a greater extent than is usually realized..

The Annual Conference, called by the Surgeon General of the United States Public Health Service, of representatives of all the State Boards of Health, has been of particular value in developing a spirit of co-operation and in deciding questions of administrative policy.

Resulting from this desire to co-operate, and to develop efficiency, systematic studies of public health organization and administration have been made by experts of the United States Public Health Service, at the request of health authorities in the following States: Illinois, Kansas, Massachusettes, Minnesota, Washington, West Virginia, North Dakota, and Nevada; and in the cities of Chicago, Baltimore, Toledo, St. Joseph,

Mo., Richmond, Ind., and Bowling Green, Ky. As a result of these studies, recommendations have been made and followed, increasing the efficiency of the Health Departments in a satisfactory manner.

This work has also shown that two important requirements must be met, in order to do good sanitary work:

1. Properly qualified, full time, Health Officers must be provided for every community.
2. Appropriations must be secured that are large enough to pay for efficient health work.

To supply the first need, many educational institutions are now preparing to meet the future demand for trained Health Officers. Courses of instruction in Public Health have been established at Harvard, Massachusetts Institute of Technology, and the State Universities of California, Michigan, New York, Pennsylvania, and Wisconsin.

Sufficient funds can only be secured by the united efforts of those interested in each community. "Those interested" includes a large number of persons every year, for business men are beginning to realize that money spent for health is an investment. At least 2 per cent of the public revenues of the State should be expended for health work, and under proper administration this expenditure can be made to show a large profit, in money actually saved by members of the community through avoidance of sickness, and in increased efficiency and prosperity.

In order to consider just what is necessary to meet the requirements of public health work in the State of Arizona, let us first outline at least part of the work that should be carried out under the supervision of the State Department of Health, and then consider how this can best be done.

### REGULATIONS AND STATISTICS.

There are now in most States, a tremendous number of Laws relating more or less directly to protection of public health.

Often these are administered under different Departments of the State Government. All such regulations should be correlated into one general Act, and everything relating to health work placed under the direction of the State Department of Health. This Department, working through its local and District Health Officers, and affiliated organizations, such as County and Municipal Boards of Health should exercise general control of every phase of sanitary work.

It is, of course, impracticable to here enumerate all the necessary regulations, but a few must be mentioned.

An accurate record of all births, deaths, and marriages is essential. Not only should physicians be required to report births and deaths, but those persons having knowledge of a birth or death where a physician was not in attendance should be required to make a report. Another important branch of vital statistics is morbidity reports.

The United States Public Health Service has framed a "Model Bill" for the notification of communicable diseases, and a standard notification card has been approved by the Conference of State and Territorial Boards of Health. On this card are listed more than 30 notifiable diseases. This system should be enforced, for no Health Department can effectively prevent or control disease without accurate knowledge of when, where, and under what circumstances cases occur.

### SANITARY ENGINEERING.

This is a most important division of the Department of Health, and in States where the population is small but growing, its early establishment will result in tremendous saving, for the reason that water and sewage systems will be installed properly at first, and with future needs in mind. Plants built, under proper supervision, will not have to be condemned and changed later, when large centers of population make these problems more complicated. Divisions of the Engineering Department's work would be as follows:

*Water Supply.* State control of local water supplies should be under the Department of Health, as water from infected sources gives rise to epidemics of disease. No local supply, either from wells or streams should be authorized until a sanitary survey had been made of the proposed water shed. In case of supplies already established an examination should be made to determine the purity of the water—or its harmfulness.

The Engineering Department can give advice for corrective measures when impure water is found. In connection with water supply, irrigation projects, hydro-electric plants, and other water collections for commercial purposes would receive attention to prevent mosquito breeding as a result of their activities.

*Sewage Disposal.* Disposal of sewage of cities and towns and of human excreta in unsewered localities should receive attention. No community has the moral right, nor should it have the legal right, to discharge untreated sewage into a stream which may be used as the source of water for domestic purposes. Disposal of trade wastes would also be under this Department, as well as privy disposal of excreta in such manner as to avoid soil pollution.



*Garbage Collection and Disposal.* This subject, likewise, is one for the Sanitary Engineer. Proper collection and disposal of garbage promotes public health by rendering fly breeding less likely, and removing the attraction for flies near houses; by acting to starve out the rat population, thus making bubonic plague not likely to spread; and by avoiding nuisances requiring abatement.

*Building Regulations.* Most of this work would be under Municipal control, but in the case of State Buildings, schools in the rural districts, buildings at mining camps, and such locations the State Sanitary Engineer would have control, as well as being an advisor to Municipal officers. Regulations regarding housing, lighting, air space, ventilation, overcrowding, plumbing, and rat proof construction, screening when necessary; location of stables and outbuildings, all have an important bearing on public health. Requirements for the construction of stables, dairies, slaughter houses, factories, etc., should be enforced by the Sanitary Engineer.

#### *Control of Communicable Diseases.*

When notifiable diseases are reported the Epidemiologist of the Department of Health would when necessary make an investigation to determine the origin of the disease, and to direct the precautionary measures that should be taken.

Requirements for the care of the case to prevent spread; such quarantine procedure as is outlined by regulations, and disinfection, should be carried out under the direction of an employee of this division, of the Health Department.

Physicians attending cases should follow directions of the Department of Health, and not be made responsible for establishing and maintaining quarantine, except as an initial precaution and until the representative of the Department could take charge.

Quarantine should be based on modern conceptions of how communicable diseases spread—from the excretions of patients and in many cases, carriers. This will mitigate many of the hardships formerly entailed when all exposed, including the breadwinner, were shut in for long periods of time.

General vaccination should be carried out under rules made prohibiting employers of labor to accept unvaccinated new employees; prohibiting unvaccinated children from attending school; and such other ordinances as would make vaccination as near a universal practice as possible.

Under the heading "control of disease" the activities of all branches of the Health Department could be mentioned. The Sanitary Engineer, in correcting water supply, and thus avoiding typhoid fever; preventing mosquito breeding to avoid malaria; abatement of fly breeding, etc., all would have their part in the control of disease.



The work of the laboratory in connection with rabies, syphilis, tuberculosis, etc., would be a part of this work.

### *Supervision of Production and Distribution of Milk.*

This is an important health function and should always be under control of the Department of Health. Such local agents as are necessary, should be authorized, but cordial co-operation should be maintained with all municipal and other authorities working along similar lines. Food and drug inspection in general belongs to the Health Department, and can be advantageously administered under its jurisdiction. In controlling milk supply, cattle should be tuberculin tested; the construction and maintenance of dairy buildings be regulated; standards of purity be promulgated and controlled by laboratory examinations; pasteurization be required when advisable, and all phases of this important question receive due consideration. The frequency with which contaminated milk has been associated with outbreaks of communicable diseases, and increased infant mortality, demonstrates the importance of this work. The good results obtained when pure milk is furnished are shown by a generally lowered death rate; indicating that control of milk supply rightfully belongs to the Department of Health.

### *Board of Health Laboratory.*

It is essential that every State Health Department have a hygienic laboratory as a part of its equipment. In the control of water supply, milk supply, and communicable diseases, the laboratory is a necessity. In addition to the examination of specimens of water, sewage, and milk, other work would be the diagnosis of rabies; the preparation of the material used in treating this disease; the preparation and distribution of anti-typhoid vaccine, and the distribution of antitoxin for diphtheria, tetanus and meningitis.

The laboratory would, for physicians, also examine specimens of pus and other material for diagnostic purposes, including sections of tumors to determine malignancy; make Widal reactions, and cultures of stools; examinations for intestinal parasites; and complement fixation tests for gonorrhea and syphilis.

Records of the work done by the laboratory would give material for instructive publications which should be issued from time to time.

### *School Hygiene.*

Great benefit to individuals and to the public health is always the result of medical inspection of school children. This inspection should also include the teachers and janitors.

Not only are physically defective children located and remedial measures carried out by the parents and family physicians, but communicable diseases are limited by their early recognition. The importance of enlarged tonsils, adenoids, defective teeth, defective eyesight, etc., upon the subsequent mental and physical development of the child cannot be over-emphasized. During these inspections the Medical Officer should see that the children are vaccinated, and that they are free from trachoma; also that the lighting is proper; over crowding avoided; pure water furnished; proper toilet facilities provided; and that all surroundings are such as to promote health.

Open air schools for certain children should be provided.

It is properly the duty of the State Department of Health to urge upon the Board of Education to have hygiene taught in the public schools, in such a way that it will be remembered.

A remarkable feature of the awakening of interest in public health work has been the willingness of teachers to assist in this work. The intelligent co-operation of teachers, who are daily brought into contact with children, can accomplish much towards creating the right ideas of how health is maintained.

#### *Care of Tuberculous Persons.*

On account of the large number of tuberculosis sufferers in Arizona, it would seem that one or more State Institutions for their care should be a part of the equipment of the Department of Health. This does not mean that all indigent tuberculous persons attracted here from all over the States, on account of the belief that climate alone can cure should be given free treatment at the expense of the tax payers.

However, open cases of tuberculosis, now a menace to those with whom they come into contact, should be isolated. If all the money now spent by counties, cities, and private charitable organizations was available for a hospital for the care of this unfortunate class, it would go far towards the maintenance of a State Institution. The establishment of arrangements for the care of tuberculous persons, would not, if properly managed, increase the number of indigents migrating to this section seeking health, and would offer a partial solution for what is now a vexing problem to many sections of the Southwest.

#### *Organization.*

Having briefly outlined the functions of a Department of Health, and the work that should be undertaken and carried out by this important branch of State Administration, let us consider the personnel necessary, their tenure of office, and compensation.

*Board of Health.*

The usual number of members of a State Board of Health is five. Four of these should receive their appointment from the Governor of the State, for such periods of time that one member will retire each year, thus guaranteeing some continuity of organization.

Meetings should be held once each quarter. The fifth member of the Board, the Secretary, should be elected by the other members, he to be the Executive Officer of the Board. The Secretary and Executive Officer would be in effect, State Health Officer, and his tenure of office should be permanent, unless removed for inefficiency or other warrantable cause. The State Health Officer should devote his entire time to Board of Health work, receiving a suitable salary, and should not engage in private practice or any other outside business.

Additional officers to be employed by the Board of Health would be an Epidemiologist, a Sanitary Engineer, and a Bacteriologist. These three officials should also devote their entire time to the work and be removed for cause only. Where four officials of the Board of Health are permanent, full time, employees receiving adequate compensation, there should be some system of securing competent men.

*Method of Appointment.*

If men that have received the degree of Doctor of Public Health from some of the Universities conferring this degree, and well recommended, are available, such men would be eligible.

Otherwise, competitive examinations should be conducted to secure such suitable officials.

The United States Public Health Service is prepared to act as the examining body for just such positions, upon request. This service prepares the questions and sends them to the State Department of Health, or other appointive body. These questions are submitted to candidates; after the examination the papers are forwarded to Washington, marked by number only, where they are graded and returned to the State Board. In this way, Health Officers will be selected by reason of fitness, determined by a high standard, and the officer passing the examination has the satisfaction of having been certified by the Government Health Agency.

This provides for the four principal employees, or Officers of the Department of Health—the State Health Officer, the Epidemiologist, the Sanitary Engineer, and the Bacteriologist.

All other employees would be appointed by the State Health Officer, with the approval of the Board of Health, and would include as many District Health Officers as may be required and authorized; Public Health nurses; clerks, laboratory attendants, etc., as the work required.



*Divisions of Work.*

Let us briefly outline a proposed division of work for the four principal officials of the Department of Health.

*Bureau of Statistics.*

The State Health Officer would be the Chief of this Bureau, and have general supervision over all the activities of the entire Department. He would cause record to be made of all deaths, births, marriages, prevalence of disease, and all transactions of the Department, including disbursements and property records. An Annual Report should be prepared for submission to the Board of Health, and there should be printed a Monthly Bulletin for distribution among the physicians of the State, so as to keep them informed and interested in the work of the Department.

Popular leaflets should also be prepared for general distribution to the laity, especially school children, containing information on health subjects in simple language. Moving picture films, lantern slides, and models illustrating sanitary work prove interesting and extremely useful in educating the laity to avoid disease.

*Bureau of Engineering.*

The Sanitary Engineer would be in charge of this Division, under supervision of the State Health Officer. His work would be in connection with public water supply, sewage and garbage disposal, supervision of building regulations, etc. Upon request from County or City authorities, he would act as Consulting Engineer on any sanitary problem.

*Bureau of Communicable Diseases.*

The Epidemiologist would be in charge of this Division, under the supervision of the State Health Officer. His duties would be to investigate the origin of diseases; suppress epidemics; control milk supply; see that school inspection was carried out, etc. He would be the Department Officer under whom the District Health Officers would serve, and in his Division would be the Laboratory, under direct charge of the Bacteriologist.

*District Health Officers.*

These officials would have charge of all Health Department activities, of whatever nature, in their districts. The number of District Health Officers required, would depend on the distribution of population. No one district should be so large that the Health Officer could not properly handle the territory assigned to him. The District Health Officers should also be well paid, full time, competent representatives of the Health Department.



Through the District Health Officers there should be established cordial co-operation with County and City Health Officials, so as to get full advantage from their work.

### *Public Health Nurses.*

These employees should perform the duties assigned to them by the State Health Officer, or District Health Officers under whom they were serving. Nurses working for the Department of Health can accomplish much good in preventing puerperal infection; ophthalmia neonatorum; working with school children; giving advice in infant feeding; instructing persons how to avoid spreading the communicable diseases; and many other ways.

### *Recommendations As to Salary.*

The following officials of the Department of Health should receive not less than the salaries indicated:

Secretary and Executive Officer .....	\$3,000.00
Epidemiologist .....	2,500.00
Sanitary Engineer .....	2,500.00
Bacteriologist .....	2,000.00

District Health Officers, nurses and other employees should receive appropriate compensation, determined after a careful survey of their field of activity.

Every state at the present time should have a well organized Department of Health. No asset of the state can compare in value to human life, our greatest national asset.

Two per cent of the general revenues of the state is not too much to ask for the support of this most important department, and the expenditure of this amount of money will be more than justified by the results attained.

### DISCUSSION.

Dr. Geo. F. Huffman, Florence:—I was much interested in the very excellent paper of Dr. Pierce and have no doubt that the health organization as described by Dr. Pierce should be the ideal condition, but in Arizona sparsely settled as it is, with large areas of country with few inhabitants, such an organization as Dr. Pierce described would be almost impossible and the great question with us is what are we going to do under our present conditions. Even in our town communities I find it is almost impossible to get the support of local health boards. The Chairman of the Board of Supervisors, the County Attorney and the County Health Officer constitute the Board of Health of our County. In our county where I have been health officer for three years, we have had one meeting in that time. How are we going to stimulate the non medical members of our Boards to activity? In my county (Pinal) if I ask for a meeting of the Board of Health, they tell me that I am the health officer, to go ahead as long as I do not spend any money. Again, in regard to our vital statistics, how are we going to get competent local registrars. I have been able, by appointing the physicians of the different communities, to get a certain degree of efficiency. Yet every single physician refused to act when they found there would no longer be compensation. I have had to trust to Justices

of the Peace and sometimes he reports and sometimes not. How are we going to correct these things? I do not know. How are we going to get co-operation of our legislature to get the proper laws to take care of these things? I do not know.

**Dr. J. W. Bazell, Holbrook, Arizona:**—Dr. Pierce's paper is perfect in every way and expresses an ideal condition of affairs for Public Health work, but it is really a little too deep for me.

It has been twice suggested this morning that we should be more practical and I believe that we can achieve much more by sticking to the practicable things which we shall be able to carry out than to aim too high and lose out entirely.

I have attended these meetings for past five years and we have threshed out very much the same subjects each time and in my opinion if we are able to secure district nurses and medical inspection of schools we shall have accomplished much good and it will make it much easier to secure compulsory vaccination and full-time health officers, etc., later on.

**Dr. B. B. Moeur:**—Like the balance of you, I was very much interested in the doctor's paper; I think he has given us a lot of good ideas. Of course we cannot reach this thing in 24 hours or 24 days. We are a young state with a small amount of money, and I believe that if we get together in these meetings that we will finally get there, because I believe it is a matter of co-operation amongst physicians.

I wish to move that we extend a vote of thanks to the doctor for this paper. Motion was put and carried.

**Dr. A. B. Nichols:**—I would like to mention the fact that Maricopa County spent last year \$841,000 for her schools. I am not in a position to tell you what was spent in the maintenance of the public health, but will assure you that it was very meagre. While I do not want to take a fall out of our County Superintendent of Schools or State Superintendent of Schools, I must say in regard to the county Superintendent of Schools that I have appealed to him to give us a little public health organization in our schools or emanating from our schools and the only thing I could get from him was that it was a good thing and he would be very glad to help us, but so far we have not received any assistance.

**Dr. T. J. Bouldin:**—I appreciate the doctor's remarks in regard to controlling epidemics, etc. The only trouble we have in our County is finding out where the epidemic starts. There is a difference between Dr. Huffman's county and our county. If I want to buy \$ 230.00 worth of antitoxin, they say "Go to it." If we do not get results up there, it is the fault of the health officer.

**Dr. J. W. Flinn:**—I will tell you beforehand that I will not take the time to discuss the paper in detail. I agree with Dr. Moeur and the members of the Association that the Arizona Health Officers Association is under deep obligation to the U. S. P. H. and M. H. Service and Dr. Pierce for the presence of Dr. Pierce at this meeting and for his very valuable paper. The members will recall that last year a committee was appointed to consider the question of revising the Public Health law of Arizona. That Committee was composed of Meade Clyne, Meserve and myself. While we are not experts in public health work, far from it, simply babes in swaddling clothes, yet we spent considerable time during the year in consideration of this matter. We have carefully studied the reports of Carroll Fox, in regard to health organizations in the states named by Dr. Pierce. Incidentally the State Superintendent of Public Health has a request before the P. H. S. for the services of Dr. Fox or some other member of the department, in Arizona; I believe the Service has assured Dr. Looney that such an inspector will be sent. We regretted very much that the inspector could not have been in Arizona for several months before this meeting. The report of the Committee mentioned is to be read this afternoon and will give the results of the study of this committee during the year; the probabilities are that the subject will be thrown open for discussion at that time. I will say this now, that the Committee is of the opinion that under existing circumstances it is not desirable to ask for a full time health officer at the present time. We all look forward to the good time spoken of by Dr. Moeur, when we can have such a system as Dr. Pierce has outlined. I do not think Dr. Moeur will live to see that day, but I have no doubt I will. And we will think very kindly of Dr. Moeur when we talk about the very pertinent remarks he made here today. The question will come up this afternoon and if we have the pleasure of Dr. Pierce's presence at that time, we will expect to have him discuss our report.

**Dr. Pierce, in closing:**—I wish to thank you gentlemen for your resolution of thanks; I feel that I should be the one to thank the Association rather than the Association's thanking me. It has been a great pleasure to come here. Of course I know that you cannot reach forth and pull out a fully equipped Board of Health and install it in your state. But I think all you men have the same idea about this thing that I have; that is, that we should strive to attain something that is worth while, even though we know that we are not going to succeed this year in having the legislature raise the appropriation. The proper way to do is to get what we can each year, at the same time bearing in mind that the time to get a complete organization is now and not 15 or 20 years hence when the population is trebled; while we would be getting more money from taxes then, there would be greater difficulty in getting bills through the state legislature with the number of legislators increased and other things to detract interest from the value of public health work. It is problem that you have to work out gradually, but I think there should be some definite idea in your minds just what you want this department to do and just what you want, when you get what you do want. Have the skeleton organization in view, so that each little bill you get through or each increase of salary that is allowed, whenever you get public health nurses, bacteriological or other laboratory started, that all these things will finally fit into a complete and well rounded efficient health organization.

## PROPAGANDA FOR REFORM.

**Iron Cacodylate.**—While manufacturers appear most ready to take advantage of the present interest in iron cacodylate by offering this in the form of capsules, etc., they have given little help to the A. M. A. Chemical Laboratory toward the establishment of standards for this arsenic compound. Manufacturers are ever ready to sell drugs of all sorts, but in view of the small demand for little used drugs, they cannot or will not safeguard the identity and purity of such drugs (Jour. A. M. A., Nov. 25, 1916, p. 1593).

**Dakin's Hypochlorite Solution.**—The following procedure is claimed to have superseded the previously published formulas: Stir 200 Gm. chlorinated lime into 5000 Cc. ordinary water and let stand over night. Dissolve 100 Gm. anhydrous sodium carbonate and 80 Gm. sodium bicarbonate in 5000 Cc. cold water and pour this into the chlorinated lime mixture, and shake for one minute. After one hour siphon off the clear liquid and filter it through paper. A portion of this must not become red if a little dry phenolphthalein is added to it (Jour. A. M. A., Dec. 2, 1916, p. 1687).

**Toxicity of Salvarsan.**—From the reports of O. S. Ormsby and J. H. Mitchell, A. M. Moody and J. D. Ellis in The Journal A. M. A., Dec. 9, 1916, it would appear that some of the salvarsan recently on the market has been unusually toxic (Jour. A. M. A., Dec. 9, 1916, p. 1764).

**Mayr's Wonderful Stomach Remedy.**—More than a year ago the proprietor of Mayr's Wonderful Stomach Remedy pleaded guilty in the federal court to the charge that the claim that the nostrum was a cure for gallstones, appendicitis and all stomach, liver and intestinal diseases was false and fraudulent. Nearly a year later a placard over the store window of the Mayr establishment the following appears: "Mayr's Stomach Remedy, is the Only Known Cure For All Stomach, Liver and Intestinal Complaints. One Dose will Prove It." The federal Food and Drugs Act should have its scope extended so that all advertising for a product shall come under the purview of the act (Jour. A. M. A., Dec. 9, 1916, p. 1774).

**Arsenobenzol (Philadelphia Polylinic).**—Dr. Schamberg explains that the Dermatologic Laboratory of the Philadelphia Polylinic availed itself of the opportunity to supply their product when salvarsan was not obtainable. Having so served this purpose in the interest of humanity and the public health, the marketing of their product was discontinued when the German product became again available. The laboratory is not established for commercial purposes and could not afford to become embroiled in patent litigation which would no doubt be instituted by the owners of the salvarsan patent (Jour. A. M. A., Dec. 9, 1916, p. 1776).

**Sulfo-Selene-Walker.**—The New York Tribune explains that it was caught "napping" when it gave space to a discussion of Dr. C. H. Walker's cancer treatment, "Sulfo-Selene." It explains that, while there is probably no single false statement



in the published interview self-sought by Dr. Walker, the impression sought to be conveyed that Sulfo-Selene will cure cancer, rests on no such foundation of evidence as to justify a reputable and responsible physician in setting it forth in the public prints. The Tribune explains that Dr. Walker's preparation has failed to obtain that recognition which would have given it a scientific status, namely, recognition by the Council on Pharmacy and Chemistry (Jour. A. M. A., Dec. 16, 1916, p. 1864).

**Bromin-Iodin Compound.**—This preparation was submitted to the Council on Pharmacy and Chemistry with the following formula: "Iodin Gr. 1, Bromin Gr. 1-4, Phosphorus Gr. 1-100, Thymol Gr. 2-3, Menthol Gr. 2-3, Sterilized Oil fl. dr. 1". According to the promoters Bromin-Iodin Compound is "A Powerful Anti-Tubercular Agent for Hypodermic Use in Pulmonary and Laryngeal Tuberculosis." The Council declared the preparation ineligible for New and Non-official Remedies because the "formula" was impossible if it is intended to indicate the composition of Bromin-Iodin Compound; and meaningless if it is intended to indicate the ingredients used in the manufacture; and also because there was no satisfactory evidence for its therapeutic efficiency (Jour. A. M. A., Dec. 23, 1916, p. 1956).

**Sodium Cacodylate in Syphilis.**—While Nichols has shown that sodium cacodylate is worthless as a spirocheticide, it is still being used in the treatment of syphilis, and it is the essential constituent of venarsen, a proprietary syphilis remedy. As a result of extensive clinical trials, Dr. H. N. Cole concluded that sodium cacodylate has no spirocheticidal value. At the utmost it has perhaps a slight action on the papular and nodular syphilids, but in no case is this effect to be compared with that produced by mercury and potassium iodid. In cases of syphilis with mucous patches sodium cacodylate is worse than useless (Jour. A. M. A., Dec. 30, 1916, p. 1012).

**Tanret's Pelletierine.**—The exact composition of Tanret's Pelletierine is not known, but is believed to be similar to the pelletierine tannate of the U. S. P. This is said to be a variable mixture of the tannates of four alkaloids of pomegranate. As only two of the alkaloids have teniafuge properties the activity of the different preparations varies with the proportion of these alkaloids which are present (Jour. A. M. A., Dec. 30, 1916, p. 2030).

**Quinine Injection.**—By taking proper precautions the number of cases of abscess formation and necrosis from the injection of quinine may be greatly reduced, but the danger of their occurrence cannot be entirely eliminated. For this reason all authorities agree that the administration of quinine by injection should be confined to the most urgent cases of pernicious malaria. The two most important precautions are, that the injection must be intramuscular and that the solution should be dilute, not stronger than ten per cent. The best salts are quinine dihydrochloride and quinine and urea hydrochloride (Jour. A. M. A., Dec. 30, 1916, p. 2030).

**The Status of Antipneumococcus Serum.**—The injection of the proper antipneumococcus serum in pneumonia caused by pneumococcus Type 1 is believed to be beneficial, but the serum treatment of pneumonia is still in the experimental stage. The pneumococci fall into various groups according to their immunologic relations and the first requisite for a rational use of the serum treatment of pneumonia is the determination of the particular type of the pneumococcus concerned in a given case (Jour. A. M. A., Dec. 30, 1916, p. 2030).



## CHARITY CLINICS IN EL PASO.

In accordance with the new state law, the work of caring for the afflicted poor in El Paso County and City has been organized so as to provide medical and surgical attention without pay. Both the County Hospital and the dispensary regular clinics have been established with a staff for each of the specialties. It is confidently anticipated that great benefit will result to the sick poor and also that the large and valuable clinical material, so long neglected, will prove useful in widening the experience of the medical men of El Paso.

For the present the following appointments have been made:

Medicine: Drs. G. Werley, J. A. Pickett; infectious diseases, Dr. J. W. Tappan, T. J. McCamant; tuberculosis, Drs. W. R. Smith and C. M. Hendricks.

Surgery: General, Drs. James Vance, F. P. Miller, E. B. Rogers and K. D. Lynch; orthopedic, Dr. W. L. Brown; genito-urinary, Dr. W. R. Jamieson; oral, Dr. L. G. Witherspoon.

Diseases of children: Drs. J. A. Rawlings and Branch Craige.

Diseases of the eye, nose and throat, Dr. E. R. Carpenter.

Diseases of stomach and intestines: Drs. F. D. Garrett and E. C. Prentiss.

Obstetrics and gynecology: Drs. Hugh S. White, J. M. Richmond and G. N. Thomas.

X-Ray: Dr. J. W. Cathcart.

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NEWS NOTES.

Dr. W. A. Evans, former commissioner of health of the city of Chicago, stopped over in El Paso on March 10th, 11th, and 12th, on his return from California, where he has been making some talks on health legislation. Dr. Evans was given a dinner by about fifteen members of the El Paso profession, at Hotel Sheldon, Saturday evening, and after the dinner, he talked on health insurance.

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Dr. M. G. Paden, division surgeon of the El Paso & Southwestern at Carrizozo, made a professional trip to El Paso.

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Dr. F. C. Diver, chief surgeon of the Dawson fuel interests at Dawson, N. M., spent several days in El Paso during the month of March.

Dr. W. P. Lee and wife were called to El Paso from Cisco, Texas, on account of the severe illness of their son, with pneumonia, the latter dying on March 12th.

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Dr. C. F. Montgomery and wife of Roswell spent several days attending the Cattlemen's Convention at El Paso.

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Dr. W. T. Brown, superintendent of the Valmora Sanatorium, at Valmora, Texas, was calling on friends in El Paso during March.

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Dr. Britton, late of Cisco, Texas, has recently located in El Paso in the practice of his specialty, eye, ear, nose, and throat.

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### THE CLINICS OF JOHN B. MURPHY, M. D.

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Volume V, No. 6 (December, 1916).

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The Clinics of John B. Murphy, M. D., at Mercy Hospital, Chicago, Volume V, No. 6 (December, 1916). Octavo of 217 pages, 47 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published Bi-Monthly. Price per year: Paper, \$8.00; Cloth, \$12.00.

The editor of Murphy's Clinics makes this announcement in the last number of the Clinics: "Mindful of a deep sense of responsibility to the readers of the Clinics, to the profession at large, and especially to posterity, the Editor has sought to present in this last number not only Dr. Murphy's last teachings, but an account of his last illness and words *In Memoriam* by his most intimate colleagues."

Dr. E. Wyllys Andrews, Dr. J. F. Binnie, Dr. Geo. W. Crile, Dr. Jno. B. Deaver, Sir Rickman J. Godlee, Sir W. Arbuthnot Lane, Dr. Ernest Laplace and Dr. Edward Martin contribute short articles of appreciation.

The Medical History and last illness of Jno. B. Murphy is told by Doctors C. L. Mix, R. H. Babcock, J. E. Kiefe and W. A. Evans.

The usual number of case reports and illustrations are to be found while the number concludes with a list of the writings of the late Doctor Murphy.

It is not the duty of the reviewer at this time to write of Doctor Murphy's life and his wonderful surgical skill. We leave this to other and more competent ones.

With the death of Doctor Murphy modern surgery lost its greatest surgical teacher.

The recent death of Doctor John B. Murphy puts an end to Murphy's Clinics. Mess. W. B. Saunders & Company announce the publication of a new bi-monthly, The Surgical Clinics of Chicago. The first number to be issued in February. The price will be \$8 per annum in paper covers and \$12 per annum in cloth.

**PROGRESSIVE MEDICINE.**—A Quarterly Digest of the Advances, Discoveries and Improvements in the Medical and Surgical Sciences, edited by Hobart Amory Hare, M. D., and Leighton F. Appleman, M. D., December, 1916, Volume XIX, No. 4. Lea & Febiger, Philadelphia. Six dollars per annum.

The December number of Progressive Medicine contains a review of the literature of the year on Diseases of the Digestive Tract and Allied Organs, the Liver, Pancreas and Peritoneum by Goodman; Diseases of the Kidneys by Austin; Genito Urinary Diseases by Bonney; Surgery of the Extremities, Shock, Anesthesia, Infections, Fractures and Dislocations, and Tumors by Bloodgood; a Practical Therapeutic Referendum and the Index.

# Southwestern Medicine

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No. 4

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## DIFFERENTIAL DIAGNOSIS AND TREATMENT OF DUODENAL ULCER.

BY

DR. M. K. WYLDER, Albuquerque, N. M.

(Read before the 35th Annual Meeting of the New Mexico Medical Society,  
Albuquerque, New Mexico, October 11-12-13, 1916.)

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'Tis only in recent years that diagnosis of duodenal ulcer has been made with much frequency. To Moynihan's classic description of duodenal ulcer is our ability to recognize this condition in its early stages largely due.

Duodenal ulcer usually presents the following train of symptoms: The patient complains of pain in right upper quadrant of abdomen, and of flatulence and belching; seldom of nausea, or burning in stomach region. This pain comes on from one to four hours after taking food; is relieved by taking of food—the more food taken the longer the relief is felt. The explanation of this is that when food is taken the pylorus is open for a greater or less time, according to the amount taken, but when the stomach empties itself, and the pylorus closes, the squeezing of the ulcer by the constricting of the pylorus causes pain, which is relieved almost immediately on taking of more food. The examination reveals tenderness at the pyloric spot, which is located one and one-half inches above the umbilicus, and one and one-half inches to the right of the mid-line. The gastric contents reveal a hyperacidity. Some even claim that hyperacidity is duodenal ulcer, and no less a personage than Moynihan is among this number. This condition is to be differentiated from gastric ulcer, gall bladder diseases, chronic pancreatitis, and chronic appendicitis. Chronic pancreatitis we can eliminate at once, as at present it can only be diagnosed post mortem. Chronic appendicitis may give rise to nausea and pain, referred alone to the pyloric region, in which the patient does not even suspect trouble around the appendix, but on examination, if the trouble is in the appendix you will always get either rigidity or tenderness or both over the region of the appendix. Gastric ulcer may cause many of these symptoms. Indeed it is impossible to differentiate a gastric ulcer just inside the pylorus from one just outside, except that perhaps the pain would begin sooner, but in gastric ulcer the taking of food makes the pain more severe—often a gastric ulcer patient is afraid to eat because on taking a few mouthfuls the pain is so severe he is forced to stop.



The pain in gastric ulcer is more severe, and more acute on percussing over the stomach. In gastric ulcer you will find an area perhaps not more than 1 inch in diameter, which gives severe pain every time on percussion. This pain is quite different from the dull pain of duodenal ulcer. Then vomiting in duodenal ulcer almost never occurs. In gastric ulcer it is quite common, and quite severe. It is simply an effort on the part of the stomach to rid itself of the food and acid contents, which cause the irritation. However, the vomit from gastric ulcer seldom contains regurgitated bile. It is simply the gastric contents. A gastric ulcer case is usually constipated, while a duodenal ulcer case is not so apt to be. Hemorrhage may accompany either, and the blood may go either way. A duodenal hemorrhage may be vomited up, or a gastric hemorrhage may pass through the bowels, so this is not a differential point between the two classes of ulcer, but is quite a factor. When it comes to differentiating between ulcer and gall bladder trouble it becomes a very decisive point. The laboratory finding in gastric and duodenal ulcers are practically identical. In neither do we get chill or fever or other signs of infection. In gall bladder disease we get the pain in much the same region, but the pain is of altogether a different type. In gastric ulcer the pain comes with eating, in duodenal ulcer it comes on after eating. In gall bladder disease the pain comes on just any time; lasts perhaps two or three days, then passes off for a time. A patient with gall bladder trouble vomits, but he vomits bile with great retching, and any of you who have been sea-sick will agree with me that bile is a splendid emetic. The old idea that if you have stone in the common duct, the bile can not flow has been exploded. The bile usually gets by. 'Tis only a small percentage of gall stone cases that show pronounced icterus. In gall bladder disease you have the same belching and indigestion that you get with the chronic appendicitis or gastric or duodenal ulcer. In gall bladder we also get signs of infection, fever, chill and headache. A stone in the neck of the gall bladder may cause infection, and may give temperature curve, very much resembling that of malaria. A gall bladder case is apt to give a history of appendicitis, typhoid fever, or duodenal ulcer, which are the principal causes of gall bladder disease.

In the treatment of duodenal ulcer, if we but consider the mechanism of the pain we must keep the patient in bed for about six weeks to keep the ulcer quiet, so that it will heal much quicker; and must feed him about every two hours, day and night, so as to keep him free from pain; and what shall we feed him?

At first only sweet milk, buttermilk, gelatin, and water. This can be increased with caution after about six weeks. Six weeks rest and proper diet will usually rob a duodenal ulcer of its symptoms, but it is not cured in this time. It is only symptomatically cured. It takes at least six months to heal an ulcer, and the patient must be willing to follow a very careful regime for that time, if he cares to get well. Of course we must give the patients plenty of alkalies; put from fifteen to thirty grains of sodium



bicarbonate in each glass of water—according to the acidity to be overcome—and use calcined magnesia—one-half dram three times daily. This will help to overcome acidity, and also acts as a light laxative. The question of surgical treatment should be discussed. Some surgeons hold that the diagnosis of duodenal ulcer means gastro-jejunostomy. I believe this view is entirely too radical, as our technic is not so perfect but occasionally a life is lost from this operation. We should think before we do it. In cases that do not yield to medical treatment; in cases where perforation is threatened; in old cases, with stenosis of the pylorus, I should say operate, but in the ordinary average case try medical treatment first, and if that fails you can still operate.

#### DISCUSSION OF PAPERS OF DOCTOR EPLER AND DOCTOR WYLDER.

**Dr. W. L. Brown, El Paso, Tex:**—I was not down for discussion of these papers and did not expect to be called on. I may say, however, that I was very interested in hearing both of the papers, and I am particularly glad that one represents what I might say is one extreme of the problem and the other paper the other extreme.

In regard to Dr. Epler's paper, I probably did not quite understand some of the figures, as I got it 20 per cent, of these diagnoses only are made in the old way and 80 per cent by the X-ray. I did not understand whether he meant to infer that he made a diagnosis in 82 per cent. of all cases he rayed, or whether he was correct in 82 per cent of the cases that he made a diagnosis in at all. I am quite sure that a great many of these abdominal conditions we have X-rayed have practically a negative X-ray examination.

In addition, the paper did not deal with the question of gall-stones, which the surgeon in making the diagnosis in the old way had to deal with and has to deal with very seriously.

While I do not wish to decry the use of the X-ray in the gastrointestinal tract, I still, on the other hand, am not ready to admit that we cannot make a diagnosis in more than 20 per cent if we get a proper history and analyze the case properly. I think that gastric or duodenal ulcer would have been the first thing I should have thought of in the first case from the meager history which the essayist has recited, not a complete history by any means in that kind of a case. As to the question of the diagnosis of chronic appendicitis with the X-ray, I do not know just how far the X-ray men claim now to be able to do that. I am rather dubious myself whether that diagnosis can be made in 80 per cent of the cases without the history of the case in in connection with the X-ray examination.

I think that there has been one great trouble in making gastrointestinal diagnoses, or the diagnoses of abdominal conditions. That trouble—it is, at least, one of the great troubles—has been not getting a complete history and not making a complete analysis of the case. I am quite prepared to admit that the pathology does not check up the clinical symptoms, I believe, as a rule. It depends to a great extent on how closely we get our clinical symptoms and how closely we analyze the case. My own personal experience is this: That we rarely find anything in the abdominal cavity, or rarely make a mistake in the examination of the abdominal cavity that we are not able to look back to and say that if we had been just a little more careful in the examination of that case or the history of that case we could have made the diagnosis. If they do not check up, we did not check them up right—that has usually been our experience.

I have never yet seen a perforated gastric or duodenal ulcer that was not preceded by some symptoms. I am not sure that I understood the Doctor rightly in that, but as I did understand him he said that in many cases of gastric or duodenal ulcer the first symptom you have was a perforation. That being true, I do not see how he could have made the diagnosis by X-ray better than by other methods. We have had two perforating gastric ulcers in the last few weeks, one a perforation post-peritoneally, and the other a free perforation; and while the free perforation so far as we were concerned at the time did not give any past symptoms, or any past history that would indicate the condition, still the acute perforation always comes in as an emer-

gency and that is not any time to get a complete history. However, after that patient recovered to the extent that he could give a complete history, it was found that he had had the typical history of duodenal ulcer, but at the time the patient was brought the history was unobtainable and in consequence we operated without any definite data, simply on the man's abdominal condition. The other case, the post-peritoneal perforation, was a gradual perforation, not an acute perforation, but was walled in, it perforated the back side of the peritoneum; and in that case, the clinical symptoms and the X-ray findings checked up exactly. The X-ray made the diagnosis, but the diagnosis of duodenal ulcer we had made two years previously. He had been treated for duodenal ulcer, and we would have made a probable clinical diagnosis of the same thing without the X-ray, because the fellow had an acute exacerbation of his symptoms and he had a localized peritoneal irritation which was very suggestive, so suggestive that we would have advised immediate operation without the X-ray. But with the X-ray, in that particular case, it was just as some one said this morning, there was something to show the man right there and it impressed upon him the necessity for immediate operation.

Now I want to say again that I do not arise with any intention of criticising the stand taken by the first essayist, but I simply want to impress the fact that in our own experience nearly all the mistakes we have made we can look back on afterwards and say that all the clinical symptoms did check up with the pathology, but we did not get the clinical symptoms as we should have got them.

**Dr. K. D. Lynch, El Paso, Texas:**—We all know that we have got in gross cases with typical history of gastric ulcer or duodenal ulcer, and when we have got into the abdomen we have not found an ulcer in either of those situations. I think that is one of the reasons why we should congratulate Dr. Epler upon his excellent paper, which should remind us to be more careful about the diagnosis in a great many of these abdominal conditions.

However, like Dr. Brown, I am not prepared to admit that we cannot make a diagnosis in a great many cases without the X-ray. I think we should use it. I think we should use every means of diagnosis at our disposal, in order to eliminate every source of error possible before we make an incision. I think with Dr. Brown that practically all of us would have diagnosed that first case as a gastric ulcer. On the other hand, there are a great many cases that give a very vague history. The general symptoms, as Dr. Epler enumerated, such as pain, nausea and vomiting, may be not typical at all of any one of three conditions. I think that in a great many of these cases the X-ray might be an important factor in enabling us to localize our diagnosis, either in the lower or the upper half of the abdomen; and I think there are always going to be a certain number of cases in which there is not a typical history, such as gall-stones or the various ulcer types, in which we will have to make an upper incision and expect to find pathology either in the stomach, duodenum or gall-bladder. I do not think that in these cases we are going to localize it before operation to any one of the three organs.

This experience, I believe, is borne out by the experience of surgeons in large clinics, such as the Mayos. They are making larger incisions, they go in for the appendix and in a great many cases also make an upper incision to explore the upper abdomen. They are not content with taking a so-called "chronic appendix" out, but make a pretty thorough exploration, and if there are any symptoms at all to indicate that there is something in the upper abdomen they do make the upper incision and thoroughly explore.

In regard to the second paper, I think that as experience with these cases increases men, even if they do institute medical treatment for gastric and duodenal ulcers, will advise an operation, even when they think the ulcer cured, for the reason that though they think the ulcer cured there is always going to be considerable local pathology due to adhesions. Of course, that would not include an ulcer that had not come through to the peritoneal coat, but there are going to be adhesions between the gall-bladder and the duodenum and to various parts of the omentum and also in some cases to the liver and the abdominal wall.

**Dr. E. C. Prentiss, El Paso, Texas:**—I have enjoyed these two papers very much indeed. There has been one point brought today which was given considerable stress yesterday, and I think very justly. That is the great value of the history. I think one very frequent source of error in abdominal conditions is the lack of detail and lack of care exercised in the taking of the history; not only that, but the lack of sufficient attention in taking the differential history. Also, of course, there should be a very careful physical examination made.



Now in these cases of gastric and duodenal ulcer which produce severe symptoms for a considerable period of time, nearly all that time they ooze more or less constantly, and I have found that one is almost always able to find occult blood in the stomach contents, both in the gastric and in the duodenal ulcer, from which there is regurgitation into the stomach. I have found in a number of cases that I have operated on for duodenal ulcer there has been occult blood in the gastric analysis at least once and in some cases every time that I would make an analysis. I believe in one case I made analysis five or six times and found blood present every time, and occasionally blood would be present in the stools.

Another test that I think is not used nearly as frequently as it should be where you suspect gastric and duodenal ulcer, and which possibly would have cleared up both the gastric and the duodenal cases of Dr. Epler, is the string test. You put a B. B. shot on the end of a string which is measured to reach two or three inches below the caput duodenalis, have the patient swallow this string at night, and on being pulled out in the morning there will be a stain over where the ulcer was, provided it is not over the greater curvature. In the severe and longstanding ulcers, there is a raw space which gives a stain. Of course, in these gastrointestinal conditions we frequently get very obscure cases; however, I find that with the occult blood in the stomach and stool and with the aid of the string test and with a very carefully taken history we not infrequently clear up an obscure case on careful examination.

In regard to appendix cases, I have run across a great many where the symptoms were in the stomach, but due to chronic appendicitis. Now in the appendix cases as in the gall-bladder cases, where the symptoms are on the part of the stomach, the symptoms before and after meals, due to eating, are irregular. For instance, in an appendix case the patient will have varying symptoms on the part of the stomach, symptoms that will not recur every day as they do in gastric ulcer, every day for a week or two and then have an interval, but will vary from day to day, which as a rule they do not do with duodenal ulcer and are not so apt to do with gastric ulcer. With duodenal ulcer there is generally a uniformity of symptoms, before meals and relieved by eating. In gall-bladder cases with symptoms on the part of the stomach you generally get gas and irregular symptoms with relation to meals that is very suggestive, with practically negative symptoms in the stomach.

I think the X-ray is a very valuable method and will generally clear up the symptoms in gastrointestinal cases—not always, but it is very valuable as showing the location of the stomach, the presence of adhesions, etc.

Another test that I frequently do in obscure cases, with pain in the stomach after eating which makes me suspect gastric ulcer, is to give orthoform in five-grain doses. If the pain is due to an open gastric ulcer, the orthoform will generally completely relieve the pain for a while, or, at any rate, will diminish it very markedly. In my experience that, as a confirmatory test, has been of great use.

Now as to surgery. Dr. Wylder mentioned the gastro-enterostomy. Most of the ulcers in the stomach that require operation are on the lesser curvature, and I believe that if the patient is in fair condition the proper operation to do is excision and not gastroenterostomy, to which view I believe the surgeons are coming more and more. I have had that done several times and the results have been to me more satisfactory than those of gastroenterostomy, in that I am not constantly anticipating a possible interference with motility, or a vicious circle. You have that danger eliminated.

As for diagnosing only 20 per cent of gastric and duodenal ulcer cases, I think that is altogether too low. With a careful history, with physical examination, with clinical symptoms, the evidence of the string test, and the other methods we have, I think we ought to diagnose a great many more than 20 per cent by clinical methods without the aid of the X-ray.

**Dr. Edward H. Skinner, Kansas City, Mo.:**—When we realize that Cabot made an analysis of a thousand cases at the Massachusetts General, in which they compared the clinical diagnosis of the case with the findings later obtained at postmortem, and found that they had failed to make correct estimation of pathology in more than 50 per cent of the cases, we begin to realize that while Dr. Epler's figures seem low there is some justice to them. I think that his figures were 21 per cent—that is, X-ray findings agreed absolutely with the clinical findings in 21 per cent of the operative cases. Is that right, Dr. Epler?

Dr. Epler: No, I said that there were 21 per cent of the cases that were true to pathology; that is, the symptoms, etc., were true to pathology.

Dr. Skinner: That was not, then, X-ray findings,

Dr. Epler: No, sir.

Dr. Skinner: But the point Cabot made was the fact—and he lamented it—that in a hospital where they had every facility for examination the clinicians were wrong in more than half the cases. Again, we take the work of the Mayo Clinic. Since Carman has been up there in the X-ray department they have made quite different figures. Formerly they rated their diagnostic evidence in this wise: History first; laboratory findings second; X-ray, third. Since Carman has been working there—it is now about three or four years—they rate the history as first, X-ray findings as second, laboratory findings third. Will Mayo speak of this in several of his papers.

The X-ray can do one of two things. It can either visualize the filling defects produced by the pathology, visualize the gastric ulcer, the duodenal ulcer, the chronic appendix; or it can determine the function of the organ, where you cannot obtain a proper filling of the duodenum. For instance you may have a spastic duodenum, maybe due to ulcer or it may be to some reflex condition as a gall-bladder or a chronic appendix or some lesion in the small intestine. If at any time during your examination with the X-ray you can visualize a normal duodenal filling, you can practically rule out a duodenal ulcer. Now in visualizing the duodenum, there are two things which are very important. The first is to use a meal of a fermented milk. The reason that Continental workers in the X-ray did not get as far as Americans have in the diagnosis of duodenal lesions and chronic appendix lesions has been that they always used a cream of wheat meal, what they call a "grease pudding," and you cannot get filling defects with a cream of wheat meal. You can estimate motility with that far better than you can with fermented milk, but you cannot get filling defects. You get practically no filling of the appendix with the cream of wheat meal.

The way we make our estimations on chronic appendix cases is in this wise: We get a filling of the appendix which shows a broken filling, an irregular filling, a kink in the appendix, and we find that this appendix does not empty along with the cecum; then we may estimate chronic appendix; or we may estimate chronic appendix from that we have found a normal stomach and normal duodenum and have tenderness over the appendix. Now that is nothing new to the clinician at all. He diagnoses it in the same way; that is the only finding he has from chronic appendix lesion—that is, tenderness on deep palpation. But when you are able to actually visualize your parts on the horizontal fluoroscope, your patient lying there on the horizontal fluoroscope, and you know where your cecum is and you know where your appendix is and you get your pain there, if you have determined the other parts normally you are ready to admit that it is undoubtedly a case of chronic appendix. There are many authorities who have brought this out very clearly. Furthermore, neither the clinician nor the X-ray man is taking a big chance in making a diagnosis of chronic appendix, because I believe they claim that 95 per cent of the people have it.

I never will forget one time when Stover, of Denver, was reporting a lot of stomach cases before the American X-ray Society in Boston in 1913, I think. He would show the plate, say, "This is a normal stomach, normal duodenum, chronic appendix." "Gastric ulcer, chronic appendix." "Duodenal ulcer, chronic appendix," etc., etc. Some one stopped him and said, "How do you make the diagnosis of chronic appendix in those cases?" And he said, "Why, you boob, don't you know that 95 per cent of the people have got that?"

It is the same way in the diagnosis of gall-bladder disease. Now there are many roentgenologists who are able to visualize the gall-stones themselves in from 40 to 50 per cent of the cases of gall-bladder disease, with the stones present. I have also found stones where they were not found surgically. Again, there are some roentgenologists who claim that they get as high as 70 per cent of their gall-bladder cases, and one man, whom we call "Ivory Soap," claims to get 94 per cent of his cases. But this man retracted slightly at the last meeting of the American X-ray Society, and he now claims that the normal gall-bladder cannot be visualized upon the plate, that whenever you get a shadow in the gall-bladder area that plunges down from the shadow of the liver area it is gall-bladder disease. When he makes a diagnosis of gall-bladder lesion under those circumstances, I tell him he has that high percentage because he is making a perfectly safe bet, just as when I find normal stomach and duodenum and appendix pretty fair and the case is suffering with periodic or non-periodic stomach attacks, with no well defined history, I will bet you ten to eight that cases running along like that have gall-bladder disease, and I won't lose.



The comfort of the X-ray examination is that you can visualize your abdominal viscera and say: "This man has a normal stomach, it empties in the normal time, there is no filling defect, there is no evidence of any adhesions, and therefore there is no pathology in the stomach.

To cite individual cases—they could be endless—there came up recently the case of a man who was sent in with the history of having had his appendix removed a year before, and they made an analysis of the symptoms, or thought that they had, and sent him in to study out the adhesions about his appendix and ascending colon. They thought that was probably the cause of his symptoms. Immediately upon the use of the bismuth and buttermilk meal we found an indurated ulcer on the lesser curvature and an ulcer in the duodenum in this case. Yet this man was complaining of trouble around his appendix, probably because he had had an appendix operation; but there was an indurated ulcer, so-called "cicatricial ulcer" in the duodenum and practically no symptoms, at least not symptoms enough to point to it from the surgeon's standpoint, and the man was a very careful surgeon who analyzes his cases very successfully.

I think that as we all become more familiar with the possibilities of the X-ray and do not look upon it as a competitor of other diagnostic methods, but as a helper and as an adjuvant, we will get a good deal farther. (Applause.)

May I make one more point? That is, in a discussion of Dr. Wylder's paper. The last part of his paper was very interesting to me. The first part of the paper did not arouse any sympathy, because as X-ray men we begin to look with a great deal of suspicion upon stomach symptoms, for we do not find that we have stereotyped symptoms for any pathology, and so we look with a good deal of suspicion upon symptoms alone. But where he spoke about the medical treatment of duodenal ulcer it was very interesting to me. That has become impressed upon me a great deal lately, because I think that the X-ray will help us immensely; if we find a stomach which is not grossly dilated where there is not a hypertrophic musculature of the stomach, where there is a small filling defect in the duodenum, in the caput, a very small filling defect with no obstruction at the pylorus, that case is going to get along very well with medical treatment. Now if we find a case of duodenal ulcer where we have cicatricial bulb and a residue at our test period with a motor meal—that is, I mean, a carbohydrate meal—why there your case will not get well under medical treatment, but demands some other method of relief, preferably a gastroenterostomy.

**Dr. Epler, closing:**—I am very much pleased at the discussion which this rather disconnected paper has brought out. It was the object of the paper to bring out some discussion, that we may all learn.

Now I made allowance for the case that can be diagnosed by history, physical signs and laboratory and I also called attention to the extreme case or the very irregular one, as Dr. Brown has spoken of, I claim that the irregular case is quite as essential and, many times, from the fact that it is irregular, to be diagnosed as the one that is true to type. So far as the percentages are concerned, I made the statement that there were 21 per cent that were true to type; in other words, the symptoms of 21 per cent of these cases were true to the pathology which existed as found at the time of operation. In other words, those 21 per cent could have been made as well without the X-ray diagnosis as with it.

I would like to call attention here, before I forget it, to one thing: That it is not uncommonly the case that a chronic appendix will set up a train of gastric symptoms and that those gastric symptoms will go on indefinitely over a period of weeks or months and maybe years, and that then, in the course of time, you will have practically a classic case of gastric ulcer, maybe simple, maybe indurated, and at that time when the patient comes you may be able to diagnose from the history, from the physical signs, because they may all be present, and from your laboratory findings that this patient does have, what? A gastric ulcer. If operative procedure is instituted in this particular case, you open the abdomen above, excise your ulcer, or what not, and do not get that appendix. What is the result? Will that patient be free from the symptoms he had? He at least will have the symptoms that were the beginning symptoms of his indigestive trouble.

So far, now, as the 82 per cent, are concerned, probably that part was not quite clear. In regard to the reports I received, 82 per cent of all the pathology in the abdominal cavity as diagnosed by the X-ray was correct. There was 18 per cent that was missed. For instance, a case which I had not long ago, and was diagnosed duodenal ulcer and gall-stones. He had the duodenal ulcer and he did not have any gall-stones. That is 50 per cent correct. Now do you catch the point? That is what I meant by

the 82 per cent. I might take a case of this kind which happened recently; Lane's kink near the ileocecal valve, chronic appendix, Jackson's membrane, immobile cecum, dilated. We had the Jackson's membrane, we had the immobile cecum, we had a postcecal appendix which was adherent; but we did not have any Lane's kink. Now that was my fault for making such a diagnosis, because I did not use the fluoroscope; I was too sure.

So far as the history of patients is concerned, I said in the paper that I used all the methods, and the man who attempts to make a diagnosis and does not use all of the methods is at fault, which applies just as much to the roentgenologist as it does to the clinician. In other words, a roentgenologist is a clinician and the only thing he has over the other clinician is the fact that he has an instrument whereby he can visualize certain parts of the abdomen.

Dr. Brown has spoken of the perforating ulcer not causing any symptoms. I said that they frequently do not cause symptoms until they are completely perforated and the patient stricken down unaware. I think those were my words. Now literally that may not be true, but I have known from my experience recently, in the last few years at any rate, no less than four cases that gave no symptoms. Why not? Because they were not sufficient so that the patient complained to a physician. Therefore, we were unaware of any symptoms. One of the most glaring cases of which I know was a policeman in my town. About a year ago he was on his beat at about eight o'clock at night when he was suddenly stricken down in the street. He had not consulted a physician for years. Had no trouble with his stomach so far as he knew. He was a strong, healthy man and weighed over 200 pounds and stood about six feet. He came under my service. The police sergeant first saw this man—and this, by the way, will touch on something that will come in later relative to the pain here (illustrating). The police sergeant diagnosed the trouble as acute appendicitis at the time and had him put in the hospital. I took the police sergeant's diagnosis without the history of the man. I opened him here (illustrating) and I found food contents. I opened him above and found the pathology. Therefore, we are without symptoms before the perforation happens because we do not get them. They are so trivial that the patient frequently will not call attention to them.

The question was asked as to how the X-ray finds the perforating ulcer—that was one of the slides which I did not mention—unless it gives symptomatology. Well, it so happened that in this instance the case came to me as a referred case for roentgen diagnosis, to find out what was the matter with the patient, if possible, and the only symptom in that particular case was the loss of flesh. The patient was on his feet continuously for long hours each day. The pathology had been eliminated in that particular case and the clinician who sent the case said that the only thing he could possibly suggest—I forget the blood count, hemoglobin, etc.—was that there was possibly in this instance a carcinoma of the gut somewhere in that region that was not giving any pain or particular signs. In the process of eliminating the possible pathology of the entire alimentary tract—which consumes time in this class of cases—I found this condition.

I have been a stickler for a complete roentgenologic examination of the alimentary tract at all times. If I find evidence of a gastric ulcer, evidence of a duodenal ulcer, evidence of a gall-bladder disease, evidence of adhesions in that region, or what not, I maintain that it is just as essential to find what other pathology may exist along that alimentary tract as it is to know that, provided you have the interests of your patient at heart, because if he will submit to an operation he wants it all done at once.

In regard to treatment of gastric ulcer, of course it is a well recognized fact that gastroenterostomy is advisable, at the present day and time, when used for drainage or in those cases where the excision of the ulcer will necessarily preclude the foodstuffs from going into the duodenum where they should be.

I would not have you misunderstand my friend and colleague from Kansas City relative to the 95 per cent proposition, in other words, the way the roentgenologist diagnoses a chronic appendix. The mere fact that most people do have a chronic appendix is not the basis on which Dr. Skinner makes his diagnosis. He is more scientific than that. It is true that we make these diagnoses by a method of exclusion to a degree, but Dr. Skinner with his experience and skill and most excellent apparatus can see practically every appendix that it is at all possible to get any barium into. He can tell you also whether it is attached to the colon, in a great majority of cases, or whether the tip of it is attached downward in the pelvis, or whether it is attached to the ileum, or whether it is free and movable, or whether it empties at the time the cecum empties; and all those things by actually viewing the outlines of the opaque material in its canal. So do not misunderstand us in that instance. Thank you. (Applause).

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**Dr. Wylder, closing:**—I have very little to add. I agree with practically everybody; I agree with Dr. Lynch that any case of duodenal ulcer that still causes any discomfort or any uneasiness should, at least, be explored, even after the medical treatment, and I think that the X-ray would form a splendid help in checking the results of medical treatment to see whether we have got as far as we should with the case. However, I have in mind three cases that I have treated medically that have been entirely free from symptoms for over a year, no symptoms whatever.

I agree also with Dr. Skinner's remarks. As I said in my paper, in any cases where there is any symptom of stenosis of the pylorus of course the only thing to do is to operate.



## BACTERIN THERAPY IN BRONCHIAL ASTHMA.

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BY

DR. A. D. WILSON, Prescott, Arizona

(Read before the 25th Annual Meeting of the Arizona State Medical Society, Phoenix, Arizona, April 26, 1916.)

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The purpose of this paper is to bring before the Society a series of cases of Bronchial Asthma treated with autogenous vaccines.

The number of cases treated was eight, extending over a period of two years. The results were four cures, two improved, two discontinued treatments.

Bronchial Asthma has long been one of the enigmas of medicine. Treatment has usually consisted in the relief of the paroxysm and an attempt to lengthen the period between attacks.

The theoretical causes of asthma have been spasm of the bronchial muscles, swelling of the bronchial mucosa, spasm of the diaphragm, and more recently that it was a symptom of anaphylactic shock. The consensus of opinion has been that the paroxysm was due to spasm of the muscles of the smaller bronchioles.

No definite explanation had been given as to the cause of this bronchial spasm until recent years. In 1909 Metzler noted that if a guinea pig be injected subcutaneously with a small dose of horse serum, and again be given 1 cc of the same serum after an interval of at least twelve days, the animal dies within a few minutes with symptoms of respiratory failure. The lungs become greatly distended and so remain even after removal from the body after death of the animal. This pulmonary inflation has been shown by Auer and Lewis to be due to bronchostenosis of peripheral origin, which arises in consequence of tonic contraction of the bronchial muscles and can be prevented and the life of the animal saved by a previous injection of atropin.

These experiments were the first to point the way to a logical explanation of bronchial spasm as the cause of bronchial asthma.

The fact that hyper-sensitiveness to foreign proteid may be transmitted from mother to offspring in animals is a further point of resemblance, as the disposition to asthma may be inherited or acquired.

If we take for granted that the bronchial spasm is due to the action of anaphylatoxin upon the muscles of the bronchioles, we must at the same time assume that there is an underlying factor in each case, as many sensitized individuals do not develop bronchial asthma.

Kolmer believes "That no one symptom or group of symptoms can be regarded as characteristic of anaphylaxis in all animals. The various species present widely different pictures with the same protein substance,

and these differences are best explained on the ground of changes in the anatomic structure and physiologic reaction of different animals."

Schultz has shown that serum anaphylaxis is essentially a matter of hypersensitization of smooth muscles in general and that during anaphylactic shock, all smooth muscle contracts. In the guinea pig the effect is most evident in the bronchi, owing to the peculiar though normal anatomic structure of the mucosa, which is relatively thick as compared with the lumen, so that the constriction of the smooth muscle throws it into folds that completely occlude the bronchi, causing death from respiratory asphyxia.

The bronchial mucosa of dogs, rabbits and rats, however, is relatively thin and poor in smooth muscle tissue, which may account for an entire absence of transitory respiratory difficulty during anaphylactic shock in these animals.

As all sensitized members of the human group do not uniformly develop asthma as a symptom of anaphylactic shock, we may assume, therefore, that sensitized individuals who develop asthma have either a bronchial lumen that is insufficient in size or a bronchial mucosa which is relatively thick.

This abnormal condition of the bronchial tubes may be an inherited stigma. I can conceive of a thickened mucosa from chronic bronchial irritation, but many asthmatics do not develop a severe chronic bronchitis until some time after the initiation of the bronchial spasms.

The logical treatment of asthma consists in discovering the source of protein absorption, removing it from the diet if it be of gastro-intestinal origin, eradicating the focus of disease, and building up the immunizing forces of the body if it be of bacterial origin.

While this conclusion may be readily stated, it unfortunately does not present as ready a solution. Our one great help in finding the offending anaphylactogen is the biologic law that all tissues of the body are to some extent sensitive to the presence of the specific protein.

This means that when a foreign protein to which the organism is sensitized is introduced beneath the skin, the tissues react at the site of injection, the resulting liberation of anaphylatoxin is absorbed and exerts its influence upon the organism.

In the case of the asthmatic where there is an underlying factor predisposing to bronchial acclusion, we get as the result of the absorption of anaphylatoxin, a typical attack of asthma if the dose be sufficient.

I have utilized this condition of hypersensitization of the skin in my attempt to discover the specific protein to which the individual is sensitized. While the list of possible anaphylactogens may contain any protein material, either of vegetable or animal origin, I have confined my tests in this series entirely to bacterial protein.

I will now state what I consider a positive reaction to a proteid to which the individual is hyper-sensitized. Upon injecting a proper sized

dose, which I will explain later, I insist that the local reaction which consists of redness, infiltration, and tenderness, shall appear within 12 hours after injection, and shall persist at least 72 hours before all signs have disappeared. The redness must be marked and extend for a space of from 7 to 12 cms. in diameter. This local reaction must be accompanied by some degree of focal reaction, centered in the bronchial tubes.

In five of the cases I was able to demonstrate a hypersensitization to certain bacteria; four of these cases responded to anti-anaphylactic treatment. One discontinued treatment.

In three cases I was unable to demonstrate to my satisfaction a positive reaction to a particular bacterial protein. In these cases treatment was unsatisfactory. The technique of preparing the bacterial emulsion was as follows. After a pains taking search for foci of infection in the mouth, nose, naso-pharynx, and lungs, a specimen was obtained, cultured as rapidly as possible, pure sub cultures made. These were sterilized at a minimum heat and put up in individual emulsions. The count was generally 500,000,000 to the cc. as I find this dilution more readily handled than the lower dilutions.

Treatment usually began with the injection of the predominating bacteria, one dose each of the series of emulsion were used before conclusions were made. The preliminary dose was always 100 million. The time between injection depended upon the skin and focal reaction. A pseudo-reaction, with slight redness, no infiltration or local symptoms, and which disappeared at the end of 48 hours, was followed by another emulsion in 48 hours.

All positive reacting emulsions were tried upon controls with the same dosage. In no case was I able to get a hypersensitive reaction.

This series of cases is composed entirely of men. The period of time during which they had suffered from asthma varied from three to ten years. Six cases had had from one to four operations upon the turbinates and septum without benefit.

The tendency in nearly all cases was to have periods of comfort at varying lengths of time. These periods of comfort and freedom from attacks I have invariably found to follow a severe attack attended with fever and dry, racking cough. The decrease in temperature was accompanied by an increase in sputum, which was easily raised. The history of these cases shows that at this time, except in those who had developed a severe emphysema or bronchiectasis that the relief was absolute. The patient going about perfectly comfortable.

Case 1, H. L., age 43, German; occupation, machinist. Family history, negative. No history of asthma in parents, brothers or sisters.

Past History: Has been subject to more or less cough as long as he can remember, usually aggravated in the winter time.

First attack of asthma began in fall of 1910. Was not very severe and did not cause him to stop work.



Since then the attacks have been more numerous, and of greater severity. At the present time spends most of each night sitting up in bed and walking around. Has had periods of freedom from attack lasting as long as a week. During these times he felt perfectly well and strong. Raises a large quantity of sputum. Sputum is generally scanty and tenacious before attacks. Finds that when he can clean his lungs out thoroughly attacks tend to subside. Has used asthma powders and cocaine spray for a long time with varying amount of relief.

Examination: Shows a fairly well developed man, weight 138 lbs., height 5 ft. 10 ins. Skin and mucosa pale. Mouth: Teeth in fair shape, no pyorrhea, no loose teeth. Pharynx, slight chronic hyperemia of mucosa. Nose breathing clear. Septum shows old puncture. Turbinates slightly enlarged.

Chest: Examination of chest shows a chronic fibroid tuberculosis of both apices. Lower left lung retracted, from base to fifth rib breath sounds very faint. Evidently old tuberculous pleurisy.

Moist rales are heard everywhere over chest, more especially at base. Eight hours since last attack of asthma. Quantity of sputum in 24 hours 8 ounces by weight.

Examination of sputum: No T. B. Gram. Negative diplococcus, member of micrococcus catarrhalis group. Strep. Equinna, Gram Positive Diplococcus, which is evidently strep. mucosus, Micrococcus, Tetrigenous and bacillus Influenza. All bacteria except the bacillus Influenza gave pseudo reactions.

The first injection of Influenza bacilli gave a marked local reaction, beginning within three hours. The following morning, areola 12 cm. in diameter and very tender and swollen. The asthma was much as usual during the night, but much more intense during the day time. The second night asthma was very severe and continued throughout the night.

Third night morphine one-fourth gr., atropin one-fiftieth gr. was given at 8 p. m. Patient passed better night. At the end of 72 hours the local reaction had faded to a slight stain. No tenderness or swelling.

On the fourth day asthma much improved. At night patient stated that his breathing was as free as if he had been given an injection of adrenalin, of which he had had previous experiences.

Improvement lasted up to the sixth day. Injection of 50 million on eve of the sixth day marked local reaction coming on quickly and lasting till third day. Exacerbation of asthma after injection, followed by relief.

This patient was under treatment for five and a half months. Total number of injections given 22. Range of doses from 25 million to one billion, given at intervals of from five to seven days. The asthmatic attacks decreased in intensity after the second week. Up to the third month patient had intermittent spells of complete relief and bronchial attacks of varying intensity. Morphine one-fourth gr. and atropin one-fiftieth gr. were given the evening of each injection.

At the end of the third month sputum for 24 hours was from one to one and one-half ounces by weight. General condition improved, increase in weight 12 pounds.

During the last two months of treatment patient had no attacks during the day time. Occasional slight attacks at night, lasting from ten to fifteen minutes. The last month of the treatment was free from spasms of any kind. Was under observation for one month after the cessation of treatment, with no attack of asthma.

The last injections contained as high as one billion influenza bacilli. The local reaction was very slight. The focal reaction for some time before discharge could not be noticed.

Follow up history. November 9, 1915, eight months after discharge, patient writes that he has been back at work since discharge. Has had no attacks of asthma. Some slight dyspnea on exertion. Otherwise feels perfectly normal.

The following case histories will be given in abbreviated form.

Case No. 3, J. W., age 32, American, farmer. Has had asthma for four years.

Family History: Mother was asthmatic. Five years ago was operated on for frontal sinusitis, supra orbital route. Sick for three weeks. Has noticed certain amount of discharge from nose at various intervals, which he has laid to cold in the head. Has had considerable cough lately, consisting mostly of bronchial slime.

Bacteriological examination of nasal secretion obtained after thorough cleansing of nasal cavity contained a practically free culture of streptococcus viridans. Upon injection of 100 million of an emulsion of this cocci, a very positive local reaction was obtained, accompanied by increase in bronchial spasm, and later by some supra-orbital pain over diseased sinus.

The treatment of this case was a prolonged one, extending over a period of eleven months. The nasal discharge was influenced from the beginning, but tended to relapse. At the end of the treatment there was still an occasional day when discharge was noticed.

The dosage in this case ranged from 25 million to four billion. The asthmatic attacks moderated in intensity after the first few weeks. Later there were periods of absence of attack, lasting as long as three weeks. Before discharge the patient had been free from asthma for over a month. This patient has not been heard from since.

Case No. 4, L. B., age 45, American, lawyer. Family History: Negative.

Past History: Six years ago had severe attack of pneumonia, made good recovery but has had trouble with left ear since the attack. Has never regained full hearing in ear. Sometimes entirely deaf in left side. Ear drum has ruptured two or three times. Asthma for four years. More severe during the last year. Has considerable cough. Has had periods of

relief, sometimes as long as a month. Does not know whether the periods of relief were coincident to ruptured drum.

Bacteriological examination: Culture made under aseptic precautions from naso-pharynx on left side in region of eustachian tube. First emulsions consisting of usual throat flora gave negative results.

Second examination: Pneumococcus found in predominating numbers. Positive reaction from 100 million. All reaction in this case was followed by increased deafness in the left ear. Treatment over a period of six months resulting in curing asthma. Ear condition improved, but not normal.

Case No. 6, R. T., age 55, English, broker. Family history: Father and one brother asthmatic. Past history: Has had chronic bronchitis for many years. Had asthmatic attacks when a child. Present illness dates back ten years. Sputum thick and purulent. Large amount.

Examination shows typical emphysematous chest. Bronchiectasis of both right and left secondary division of bronchi. Heart enlarged.

In this case a non-identified gram positive cocci was constantly found in preponderance. Upon injection, a decidedly marked reaction was obtained, resulting in great discomfort.

Dosage was started at five million and gradually worked up. For a long time any attempt at increased dosage was followed by intense distress. Maximum dose in this case 200 million. At the end of nine months, the typical bronchial spasms were ended. Marked dyspnea on exertion was constant. Sputum still large quantity. While the patient made at least a temporary cure, I expect to see the asthma recur.

The two absolute failures were cases of long standing with profuse expectoration and marked bronchitis. After several attempts to obtain emulsion that would give positive hypersensitive reaction, the patient tired and gave it up.

### *Conclusions.*

Animal experimentation has proven that bronchial spasm is a constant feature of anaphylactic shock in certain animals.

Clinical experience has shown that in persons suffering from asthma the condition can be greatly aggravated by coming in contact with the offending proteid, or by having the specific protein introduced into the body either through the gastro-intestinal tract or by inoculation.

Persons suffering from Hoarse Asthma have been helped or cured by immunizing doses of Diphtheria antitoxin. The modus operandi of de-hypersensitization is still obscure. It would seem as though the process consisted in either destroying or delaying the formation of specific amboceptors which in conjunction with non-specific compliment disrupt the protein anaphylotoxin with liberation of anaphylatoxin, or the stimulation of anti-bodies which have the power to further digest or neutralize anaphylatoxin, rendering it innocuous.



## A PLEA FOR A MORE INTELLIGENT INTEREST IN TUBERCULOSIS ON THE PART OF THE MEDICAL PROFESSION.

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BY

F.H. McKEON, M. D., Surgeon, U. S. Public Health Service, Fort Stanton, N. M.

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It may appear to many that a plea for a greater interest in tuberculosis at this time is a work of supererogation. It could be urged, and truthfully so, that more thought is being given to the tuberculosis problem, not only by physicians but by the laity, than ever before. The numerous municipal, state and national associations for the prevention and cure of the disease and the sanatoria located in every state of the Union might well be adduced as evidences of widespread interest. But while admitting these facts and having the greatest admiration for the work that has been done and is being done, the writer maintains that there is a need for a more intelligent interest in tuberculosis on the part of the medical profession. This conclusion has been reached after nearly four years' service at the sanatorium of the United States Public Health Service, during which time there has been ample opportunity not only to examine the work of his brother officers but to observe the activities of many physicians practicing in the Southwest.

Many tuberculosis workers, among them the best, are abandoning the clinical side, which includes not only the treatment of a tuberculous person but also the teaching him to take such intelligent care of himself that he will not be a menace to the non-infected, for the broader and more important field of work which has as its object the ultimate eradication of the disease. This is as it should be for if we are to rid the human race of this, the greatest scourge ever inflicted upon it, we must push our battle line forward, and not be content with merely holding our trenches and caring for our wounded as we have done in the past. That we have still much to learn concerning the means of transmission of the disease and the manner in which immunity to it is gained, is conceded by all investigators. But little by little we are adding to our knowledge and although the time is very far distant indeed when it will be said that tuberculosis is conquered, there can be no doubt that a time is surely coming when it will cease to exist as a manifest disease. It may be that the solution will be found in regular periodic physical examination of all persons by properly qualified physicians, thus detecting the disease in all cases in its very infancy, and having learned of its presence taking such steps as will insure not only the recovery of the threatened one but the protection of those about him. Or it may happen that a biologic product will be elaborated that will confer

active immunity, especially to children, as is now done in smallpox and typhoid fever. Bushnell<sup>1</sup> suggests that the absolute isolation of all children from tuberculous adults, since practically all tuberculosis is contracted during childhood, will result in the ultimate disappearance of the disease as an entity. The tubercle bacillus, he avers, will always be with us but only as a benign immunizing agent. This plan, however, would have to be secondary to the periodic physical examination of all persons, urged by Smith<sup>2</sup>, since it would be necessary to know the adults who would be dangerous to children. There are large numbers of cases of open tuberculosis with symptoms so mild as to never attract the attention of the infected one or those about him. And if, as frequently happens, there is a sufficient amount of antibodies formed to heal the lesion before much tissue destruction occurs the "carrier" never knows that he had the disease. It is this type of case that is particularly dangerous to children. There are those who tell us that in time racial immunity will be established and the disease thus held in check. They point to the comparative infrequency of phthisis amongst the Jews, the oldest of civilized races, and to the hypersusceptibility of the Indian, the youngest member of civilization, as proofs of the argument. And given sufficient time and isolation from all other peoples, a race might attain a high degree of relative immunity. But the length of time needed would be too great and the world is so constituted today that it is impossible to prevent intermingling of the less immune with the more immune races.

However, these speculations as to what the ultimate solution of the tuberculosis problem will be, interesting as they are, have only an indirect bearing on the task that confronts those who are fighting to prevent the spread of the disease in the present. And in the last analysis it is the general practitioner who can do the most along this line. It is he who first sees the patient when the latter is impelled to seek medical advice by reason of vague symptoms, often not referred to the thorax, which should indicate to the physician the need of a careful and thorough examination of the lungs. Too often a patient complaining of indigestion, or malaise, or a slight cough, is given a prescription intended to control the symptom and told not to worry. The relief experienced from the digestant, cough mixture or tonic lulls the patient into a feeling of security and allows the disease to continue its insidious attack. When the diagnosis is finally made, the case is too often found to be a far advanced one. Even then it is in rare instances that the physician has sufficient conception of the nature and extent of the lesion to properly advise his patient. The vague advice to "go West" is not sufficient. The once almost universal idea that certain climates have a specific action in healing tuberculous lesions is being abandoned. And while it is not within the province of this paper to discuss the effect of climate in tuberculosis, I cannot refrain from the statement that the role it plays would seem to be a comparatively unimportant one.

In a recent article, Ford<sup>3</sup> undertook a study of one thousand cases that had been admitted to the Gaylord Farm Sanatorium between Oct., 1907, and January, 1915, in order to see just what was being done by the family doctor in his efforts to diagnose pulmonary tuberculosis correctly. His article deals rather with the neglect of the physician to utilize the diagnostic means at his disposal than with correct diagnosis, but it is so near the point that I am trying to make that his summary is given herewith:

"These consulted nineteen hundred and forty physicians of whom 1,085, or 55.1 per cent., made a physical examination only, and of this number, 151 did not deem it worth while to have the patient strip; 13, or .7 per cent. took temperature only; 14, or .7 per cent., made a sputum examination only; 381, or 20 per cent., made a chest and sputum examination; 114, or 6 per cent., examined the chest, took temperature, but did not make a sputum examination; 3, or .02 per cent., took temperature and made a sputum examination, but no physical examination; 133, or 7 per cent., made a chest examination, took temperature and examined sputum; 197, or 10.2 per cent., made no examination of any kind."

In other words, only seven per cent. of nineteen hundred and forty practicing physicians gave evidence of sufficient knowledge of clinical tuberculosis to realize that no one can arrive at an intelligent opinion as to the presence or absence of the disease without utilizing the stethoscope, the thermometer and the microscope. Of course, I am speaking now of the class of cases that have not advanced to the hopeless stage. It does not require much diagnostic acumen to pronounce the far advanced consumptive, with his emaciation, lagging gait, harassing cough and copious expectoration, to be tuberculous. While it is not given to every one to have sufficient skill in percussion and auscultation to detect an early lesion, although I believe that the great majority of educated physicians can be taught to do so, all of us are or should be able to properly interpret temperature findings; and what is more important should have a lively sense of the large part that the thermometer plays, when correctly used, in the diagnosis of tuberculosis. Very frequently an accurate temperature record kept for a period of three weeks to a month will enable one to diagnose the disease even before the most expert can find physical signs.

Another mistake pointed out by Ford is the failure of the practitioner to realize that the spitting up of blood usually means tuberculosis. Smith<sup>4</sup> found that out of a total of 1,210 cases of pulmonary tuberculosis admitted to the United States Marine Hospital (now Public Health) Sanatorium, at Fort Stanton, New Mexico, 354, or approximately 21 per cent., gave a history of having had one or more hemorrhages before arrival. The relative frequency of hemorrhage before admission, since I have been stationed at the sanatorium, is about the same as it was then. In taking anamneses at the time of the first examination, I have been particularly struck with the number of men who stated that they spat blood one, two or more years previous and had sought medical advice only to be told that the symptom meant nothing more than "throat trouble," or something equally vague, and need cause no alarm. Very rarely was an examination of the chest made. Now, as Ford well says, there may be some excuse for a



man who carefully examines his case but makes a wrong diagnosis, but there is absolutely no excuse for the man who takes neither time nor trouble to go over his patient.

Passing from the men who fail to utilize the means at their disposal to make a diagnosis to those who do, what do we find? Perhaps not such a deplorable state of affairs, since, as has already been said, there is some excuse for the man who attempts to make a correct diagnosis and fails, but certainly a most lamentable one. The admissions to Fort Stanton from July 1, 1913, to January 31, 1915, (this period is chosen because of the writer's personal knowledge of conditions during the time) numbered 414. Of these, 376 were transferred from various United States Marine Hospitals, the remaining 38 being readmissions who came back by authority of the Surgeon General without having applied at a marine hospital for relief. When a diagnosis of tuberculosis is made in a patient at a marine hospital, the officer in charge requests authority from Washington to transfer the patient to Fort Stanton if in his judgment the man is able to travel and is a suitable case for sanatorium treatment. When the request is made a copy of the patient's clinical record, including the physical findings, is sent with it to Washington. The record is subsequently sent to Fort Stanton. In this way the officers at the sanatorium are enabled to compare their findings with those of the transferring station. Original examinations at Fort Stanton were made at the time this was written, by the commanding officer, Surgeon F. C. Smith, U. S. P. H. S., assisted by the writer. Dr. Smith is a recognized authority on pulmonary tuberculosis whose judgment as to the nature and extent of a lung lesion would be accepted as correct by practically all phthisiologists in this country. Hence, I feel justified in making the findings at Fort Stanton the standard so far as the United States Public Health Service is concerned.

Out of the 376 admissions referred to above, less than 2 per cent. had been correctly diagnosed at the transferring station as to the nature and extent of the lesion. I have reason to believe that similar conclusions would be drawn if inspections were made of the records of the other two government sanatoria. In considering these statements, it is to be borne in mind that the transferring officers are for the most part commissioned officers of a government medical corps; that they are commissioned only after passing a rigid examination, the standard of which is considerably higher than that maintained by any state examining board; that in order to be considered for commissions they must be graduates of high-grade medical schools and have presented satisfactory evidence of liberal pre-medical education; and that their service experience has afforded them opportunities to become skillful clinicians or sanitarians. If these highly trained men are not competent to properly elicit and to correctly interpret the physical signs of phthisis, what can be expected of the ordinary practitioner? The latter is frequently a man of only ordinary medical training whose opportunities to add to his store of knowledge are limited. If

he does find time to visit a medical centre he is attracted to the clinics of the skillful surgeon or the brilliant internist rather than to the clinic where correct methods of early diagnosis in tuberculosis are taught. His experience leads him to believe that a person with the disease is doomed and, since he rarely makes a diagnosis until the process is far advanced, he is correct in his belief. He cannot be interested in a disease that apparently offers no opportunity for cure.

It is self-evident that one cannot be interested in a subject unless he has knowledge of it; and the great majority of the medical profession has only a vague general knowledge of tuberculosis. The blame lies not with the practicing physician, however, but with his teachers. The general early diagnosis of phthisis will not be possible until every medical school gives the subject the prominence it deserves. How this may be done will be discussed later. Much may be learned however from a study of the numerous excellent text-books on the subject and it would seem that every physician who may be called upon to diagnosticate and advise in a case of pulmonary tuberculosis should realize the importance of familiarizing himself with at least one of these works. After examining several hundred case histories written by men who transfer patients to the sanatorium at which I am serving, I cannot escape the conviction that the average physician is ill-advised as to the fundamentals of the pathologic processes of phthisis. It cannot be said of this phase of the subject as was said of diagnosis that due importance is not given it in the schools. Practically all graduates in medicine have received adequate instruction in the pathologic anatomy of tuberculosis, but very few of them seem to retain any considerable portion of it. And since no intelligent conception of the meaning of physical findings can be had without a knowledge of the underlying pathology, a return to the text-books would seem to be indicated. And it should not only be known that there are stages of infiltration, of consolidation, of tissue destruction and of connective tissue proliferation, but that these processes may be of varying ages and degrees of activity and when properly interpreted strongly influence the prognosis and treatment. And it may not be amiss to here briefly review the symptoms and the general management of the three commonly accepted stages of the disease.

#### *The Early Case.*

Incipient tuberculosis of the lung consists of an infiltration of one or both apices or of a small portion of one lobe, without destruction of tissue, marked constitutional symptoms or serious complication. Early tuberculosis may manifest itself in many different ways. There may be only a disinclination toward physical or mental effort or a complaint on the part of the patient that he tires easily; there may be only loss of appetite with corresponding falling off in weight; indigestion may be the only symptom complained of. If patients are carefully and persistently questioned however the statement will be elicited in practically all cases that there is or has

been a slight cough or "clearing of the throat" which may or may not be accompanied by expectoration. In those cases in which hemorrhage, small or large, is the first symptom noticed, a history of previous slight cough can generally be obtained if the patient is observant. Accompanying any of these symptoms there will usually be found a slight afternoon rise of temperature and a quickened pulse rate. It is at this time that a careful examination of the chest and sputum will often reveal incipient disease, and a failure to make such examination constitutes culpability on the part of the physician consulted. What shall the chest examination consist of? In the hands of the expert, palpation and percussion will play an important part, but the man who has not been trained to detect the delicate shades of difference in pulmonary vibration and resonance that accompany beginning infiltration will do well to place his main reliance upon the auscultatory findings. He should listen not only to natural breathing, which may tell him nothing, but especially "to the natural inspiration following slight but evident cough." By following this method any man who is accustomed to the use of the stethoscope will by dint of practice be able to detect even the finest rale. But it is to be remembered that rales have different significations according as they are moist or dry, coarse or medium, fine or crackling in nature and in order to intelligently direct his patient's treatment the physician must have a full understanding of this fact. To quote Smith<sup>2</sup>:

"The ordinary practitioner must be prepared to distinguish between the different type of early disease and advise accordingly. One may need perhaps only a few months' rest, or a modification of certain habits of work or play, the abandonment of vicious habits or inordinate amusements, and the adoption of more hygienic practices relative to ventilation, etc. For another, even with early incipient disease, may be required absolute and immediate rest and a ruthless suppression of the most cherished habits and most ardent desires of the individual."

It is rare that an incipient case cannot be cured without sanatorium treatment providing that the patient is in even ordinary surroundings. Rest, either partial or complete, preferably in the open air but at any rate in a well ventilated room, a sufficiency of good nourishing food, (which need not necessarily consist largely of milk and eggs) and avoidance of worry will accomplish the result as surely at home as at an institution. The thermometer should be the guide to the degree of rest needed. So long as there is even the slightest rise of temperature the patient should be confined to bed. In afebrile cases, ten hours' rest at night and two or three during the day will ordinarily suffice. If the patient can well afford it and wishes treatment at a sanatorium in any of the climates that are generally supposed to have a peculiarly beneficial effect in tuberculous disease, he will of course be allowed to go. And those who for any reason are unable or unwilling to follow the regimen at home should, whenever possible, be sent to an institution. The training that a tuberculous patient gets at a sanatorium is very valuable both to himself and to those about him.



*The Moderately Advanced Case.*

Moderate tuberculous involvement of the lung is usually taken to mean an infiltration or partial consolidation of not more than two lobes without cavitation or serious complication. The clinical symptoms in this class may be mild, although always more pronounced than those seen in incipient cases. There is usually cough and expectoration, periods of moderate pyrexia and a tendency to tire easily; the appetite fails and there is moderate loss of weight. Inspection may show inequality of the respiratory excursion, palpation some increase of vocal fremitus and percussion impairment of resonance. But, here again, the occasional examiner will do well to depend largely upon the stethoscope. There may be weakened breath sounds over the area involvement; bronchovesicular breathing may be but rarely is met with in the degree of consolidation present in moderately advanced cases; but rales are always present and will always be heard if the auscultatory cough is employed. It is important in this as in the far advanced stage to determine the degree of activity. This may be done by considering the severity of the cough, the amount expectorated, the presence or absence of fever and the amount of moisture present. Bonney (5) emphasizes the statement that "the degree of activity may be measured to a great extent by the amount of moisture in the bronchial tubes." The management of a moderately advanced case will depend largely upon the degree of activity and the age of the patient. A young or middle-aged person displaying signs of even moderate activity should be sent to a sanatorium whenever possible. The length of time that sanatorium treatment will be necessary can never be predicted with certainty, since in tuberculosis as in other infections the patient and not the disease must be treated. In patients above the age of forty or forty-five with evidences of long standing disease and only slight activity, a modification of the mode of living, habits, etc., as outlined in the management of incipient cases, will usually suffice.

*The Far Advanced Case.*

This class takes in all cases not included in the two previous groups. The classification of far advanced tuberculosis from a standpoint of amount of involvement is taken to mean that the patient so classified has disease in more than two lobes or disease in one or two lobes with cavity formation or a serious complication. The clinical manifestations of the stage are many and varied. While some individuals may present every appearance of robustness, in the great majority of cases the general appearance of the patient is highly suggestive of the disease.

"Emaciation, pallor, dyspnoea and cyanosis are often pronounced. The skin of the body may be dry, harsh or even scaly, and the hands thin, cold and clammy. The fingers may be elongated with tapering extremities and incurving nails or the ends distinctly clubbed. The neck is thin and appears unduly long. The ears stand out prominently from the sides of the head and are often waxy, bloodless and almost transparent. The breathing is at times labored, with the action of the accessory

muscles of respiration prominently displayed. The nose may be pinched, the eyes sharp and bright, the hair dry and lustreless, and the face pallid, cyanotic or flushed. The complexion is sometimes remarkably pale and clear exhibiting strikingly a delicate plexus of superficial veins. The patient frequently assumes a pronounced stooping posture, the general attitude being that of marked debility." (Bonney, 5.)

While this is the picture that will sooner or later be presented by nearly all cases of far advanced phthisis, it is to be remembered that between it and an appearance of health and vigor there are many degrees. Dependent upon the amount of relative immunity possessed by the individual and treatment, it may take a considerable time for a patient to take on an appearance in which a glance is sufficient to make the diagnosis. In those cases in which marked fibrosis exists, the duration is much longer and patients so afflicted may live an astonishingly long time despite emaciation and respiratory incapacity. The physical signs of this stage depend upon the pathologic changes that have taken place in the lungs. Areas of infiltration will produce impairment or resonance and rales, the latter differing in character according to the amount of moisture present. Over consolidation will be found dullness, increased vocal fremitus, bronchial or bronchovesicular breathing, bronchophony and rales. Cavity formation may manifest itself by tympanitic, amphoric or cracked-pot resonance in percussion, but the surest way to detect a cavity is by auscultation which will elicit pectoriloquy or egophony and cavernous or amphoric breathing and gurgling cavernous rales. Fibrosis may give the signs of infiltration, consolidation or cavity formation or all three, but the distinctive signs of the process are weakened breath sounds and dry clicking or crackling rales. The intensity of the breath sounds may be diminished in any far advanced case of tuberculosis and a cavity may exist without always giving physical signs. The latter fact is explained by the plugging of the tubes or by the filling of the cavity itself with purulent secretion. Complications may be met with in any stage of the disease, but are oftenest seen in advanced cases. The most common tuberculous complications are tuberculosis of the larynx, pleurisy, empyema, genito-urinary tuberculosis, tuberculosis of the peritoneum, tuberculosis of bones and joints, and glandular tuberculosis. Syphilis is prominent as a non-tuberculous complication and the two diseases frequently coexist.

What shall we do for the far advanced consumptive? Certainly we should put him in an environment that will effect an arrestment of his disease if that be possible; prolong his life and earning capacity if we may; but in all cases make him as comfortable as may be and keep him from being a menace to others, especially to children. Sanatorium or hospital treatment will accomplish these desiderata in most cases and the nearer the sanatorium is to the patient's home the better it will be for all concerned. The patient without complete involvement of both lungs or serious complications, a reasonable degree of robustness and only moderate clinical symptoms, may with profit be transferred to a different climate if he be a person of sufficient means or a government beneficiary. But to send

a patient with nearly complete involvement of both lungs, marked emaciation, daily fever, rapid pulse, distressing cough and copious expectoration, several thousand miles to a higher altitude is not only a waste of time and money but is criminal cruelty. Segregation of such cases is undoubtedly desirable, but it need not necessarily be done in an institution exclusively for the tuberculous. This statement holds good for the fibroid case as well. In this type, dyspnoea is always severe and since, as has already been stated, the life of a fibroid patient may be prolonged for a considerable number of years, it is of the first importance that he be where the act of breathing will be easiest for him. In other words, he should be at or near the sea level. Men above the age of fifty-five years with clicking rales in their chests and tubercle bacilli in their sputa should not be sent to a distant sanatorium.

Most of the complications can be treated equally successfully anywhere and some of them should be kept away from high altitudes. As has been stated, syphilis frequently accompanies tuberculosis and a Wassermann test should be made in all cases of phthisis where there is reason to suspect a luetic taint. Treatment with neosalvarsan followed by a course of mercury, and in selected cases potassium iodid, will often result in a marked alleviation of all symptoms.

It is not intended that the above should be considered other than as the barest outline of the symptoms and management of tuberculosis. On such a vast subject it would be impossible in a paper of this length to do more than stimulate thought. Much of what has been said is elemental and all has been better said many times before. Volumes have been written upon the importance of early diagnosis in tuberculosis, but since it is evident that only a small proportion of general practitioners have been reached, or at any rate impressed, by the voluminous literature, we must keep on iterating and reiterating that early diagnosis means cure and probably the eventual eradication of the disease.

The ability to detect early lesions is important to those of us who make examinations for enlistment for another reason: namely, the keeping down of the number of non-effectives and of additions to the pension rolls. A large percentage of enlisted men who break down with tuberculosis during their first two years of service probably had a demonstrable lesion, active or inactive, at the time of enlistment. The same statement might truthfully be made of those persons who became manifestly tuberculous within two years of the time that they have been examined and passed for life insurance.

Reference was made previously to the need of more thorough instruction in the diagnosis, especially early diagnosis, of tuberculosis in the medical schools. When it is recalled that even now after years of hard and persistent fighting against it, the disease kills more than 140,000 persons annually in the United States alone and still stands first on the list of



mortality tables it would seem that no such need should exist.\* However it is a fact that comparatively few American schools are properly equipped to teach phthisio-diagnosis and therapy. This omission in the medical curriculum should be remedied by requiring every "acceptable" medical school to have a clinical chair of medical tuberculosis. The chairs should of course be filled by men well qualified to teach the subject.

As has been indicated earlier in the article, the graduate in medicine can learn a great deal about the subject by frequently consulting the books that have been written on it. He should of course avail himself of post-graduate instruction whenever that is possible. He may never become a clinical expert in the diagnosis of tuberculosis, but he can learn to recognize the danger signals of the disease and refer his patients to a specialist before irreparable harm is done. Government medical officers should, upon being commissioned, be sent to the sanatoria of their respective Services for a course of instruction. When they have all been taught to recognize the early manifestations of tuberculosis and what class of cases are suitable for sanatorium treatment, the government will be saved a considerable sum of money annually.

In conclusion, let it be said that the eradication of tuberculosis is peculiarly a problem of the physician. Social workers and philanthropic laymen can do much by improving social conditions and alleviating poverty, but the disease will never cease to exist until the entire medical profession has an intelligent grasp of the whole nature of tuberculosis and a keen appreciation of the importance of early diagnosis.

#### REFERENCES.

- (1). Bushnell, G. E.—Relation of Immunity to Infection in the Tuberculosis of the Adult. Transactions, Medical and Surgical Association of the Southwest, 1914.
- (2). Smith, F. C.—The Eradication of Tuberculosis and the Means by which it may be accomplished. Texas State Medical Journal, January, 1915.
- (3). Ford, J. S.—Does the general practitioner utilize the means at his disposal for the diagnosis of early pulmonary tuberculosis? Medical Record (New York), September 18, 1915.
- (4). Smith, F. C.—Hemoptysis in Pulmonary Tuberculosis. Transactions, National Association for the Study and Prevention of Tuberculosis, Fourth Annual Meeting.
- (5). Bonney, S. G.—Pulmonary Tuberculosis and Its Complications. W. B. Saunders & Co., Philadelphia.

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\*Since this statement was written, tuberculosis has fallen to second place on the list of mortality tables. (The author.)

## THE X-RAY DIAGNOSIS OF FOCAL INFECTIONS ABOUT THE HEAD.

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BY

W. WARNER WATKINS, Pathological Laboratory, Phoenix, Ariz.

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Some writer, who evidently reads current medical literature, has made the sarcastic comment that we are coming to regard all disease as due either to metastatic infection or to acidosis. This may be a just criticism of a tendency to over-enthusiasm on these subjects, but in a given diseased condition, we have never completed our search for the causes of pathological processes, until these two factors have been eliminated.

In spite of voluminous literature on the subject of the dominant importance of focal infection in chronic disease, it has not yet received the attention which it deserves from the medical profession. For fifteen years, Murphy taught that whenever you have an acute chronic arthritis, you can always find a localized pus pocket elsewhere in the body, meaning that an arthritis is always metastatic. Further, of what is of more vital interest to the general practitioner, the joint disease cannot be cured until the original focus is located and eradicated. This teaching of the Master Surgeon is no longer disputed, although frequently forgotten when the physician is called on to treat an arthritis.

Focal infections can be located anywhere in the body or on its surface: furuncles, gonorrheal pockets in prostates, seminal vesicles, tubes or ovaries, pus pockets in glands, chest, abdomen, extremities, or along the gastro-intestinal tract. But tonight, our remarks will be confined to those foci located about the face, i. e., in the alveolar processes or in the accessory sinuses of the head. The conditions which may, and frequently do, arise by metastasis of organisms from such foci are, arthritis, endocarditis, nephritis, neuritis, myositis, stomach or duodenal ulcer, gall-bladder infection, appendicitis, metastatic abscesses, besides conditions designated by such vague terms as anemia, neurasthenia, neuralgia, chronic headache, etc. This sounds like a formidable list, but the authorities from whom the list is quoted are just as formidable:

C. Burns Craig says: "Purulent processes in the posterior urethra, vagina or tonsil are considered ample explanation for any arthritis, neuritis or endocarditis which may subsequently develop. Why, then, do we pay so little attention to focal infections around the teeth, when we know that these foci harbor that most dangerous group of metastatic organisms, the streptococci." (JAMA, 12-5-14.)

Dr. Billings says: "Alveolar focal infection may be the dominant factor in the production of a systemic disease, of which endocarditis, chronic arthritis and myositis are examples."

Dr. C. H. Mayo says: "The great importance of the well-known diseases of the nasal passages, with their sinuses, the lymphoid tissues of the pharynx and the diseases of the gums and teeth is now generally appreciated. In chronic and recurrent

diseases a search must be made to establish the non-participation of each of the several sources of infection."

Moody, giving the figures from Billings Clinic, says that 332 patients with chronic arthritis were given careful X-Ray examination of the teeth and 89 per cent. of them were found to have chronic alveolar abscesses. (JAMA, 9-16-16.)

Elshnig (JAMA, 10-17-14) says that out of 208 cases of disease of the optic nerve, 35 or 15 per cent. were due directly to disease of the nasal accessory sinuses.

Rosenow says: "My studies on the members of the streptococcus group make it likely that it is in the focus of infection that changes in virulence occur. In other words, the focus of infection is to be looked on not only as the place of entrance of the bacteria, but also the place where the organisms acquire the peculiar property necessary to infect. These foci are so common in patients suffering from arthritis, neuritis, appendicitis, ulcer of the stomach, cholecystitis, goitre, etc., and so rare in individuals who have had superb health for years that their direct etiological role can scarcely be questioned."

Dr. Rosenow's work has demonstrated to the satisfaction of himself and many critical observers that certain strains of streptococci have an elective virulence for certain tissues and localities. For example, a certain strain of streptococcus will cause ulcer of the gastro-intestinal mucous membrane when they metastasize. Moody established this experimentally by isolating this specific strain of streptococci from alveolar abscesses and injecting them into rabbits where they almost invariably produced hemorrhage into the stomach and, usually, ulcer. So, the careful internist, if he places any credence in Rosenow's work, must locate and eradicate all such pus foci from his ulcer patients, as part of the routine medical or surgical treatment. More recent studies of Rosenow and his co-laborers, have illumined the subject of the bacteriology of alveolar and sinus infections to an astonishing degree. The cultivation of streptococci under partial oxygen tension has revealed that they change their cultural, morphologic and pathogenic characteristics according to the oxygen tension under which they grow. They will develop at all tensions from atmospheric to complete absence of oxygen, but their elective virulence will depend on the tension under which they were forced to develop. By planting a pure strain of streptococci in long test tubes, colonies of varying virulence and different tissue affinity can be picked off at different depths in the tube, those nearest the top where oxygen is plentiful having characteristics entirely different from those near the bottom where oxygen supply is poor. It can easily be seen that an alveolar abscess without exit, will develop an anaerobic organism with a particular virulence; when the abscess ruptures and a little oxygen gains access, the organism will change its cultural characteristics and likewise its elective virulence; if the tooth is extracted and free access of oxygen allowed, provided the organisms are not destroyed in some manner, we will have still a third strain of streptococci with characteristics different from both of the others. The necessarily close relationship between the X-Ray findings and the bacteriological laboratory should begin to become apparent.

Although, as far back as 1881, the dentists were warning the medical profession of the dangers of infected teeth, and have continued to do so from that day to this, it was not until 1910 that William Hunter, of London,



pointed out the relationship between septic teeth and systemic disease. About the same time the roentgenologists (headed by Pfahler in 1909), entered the field with their plea for the use of the X-Ray as a means of accurately diagnosing the conditions around the teeth. Since that time, numerous articles have appeared, an enormous amount of experimental work has been done, and the relationship between suppurative processes about the face and a host of systemic disorders has been established beyond the possibility of contradiction.

The sinuses of the face, maxillary, ethmoids, frontals and sphenoids and abscesses around the teeth, whether communicating with the mouth through a sinus, or not, furnish the necessary conditions for the development of virulent organisms, as stated by Rosenow; these conditions are (1) seclusion from bactericidal agents, and (2) partial oxygen tension.

With these preliminary remarks, as a foundation, this paper presents three propositions:

First: It is necessary to locate these foci of disease, and, in searching for them, the aid of the Roentgen-pathologist is essential.

Second: It is necessary to correlate the X-Ray and other laboratory findings in order to determine the gravity of the pathology found.

Third: The three-cornered relation between physician, his patient, and that patient's dentist is of vital importance, and is far too frequently on an absolutely wrong basis.

First: The routine employment of the Roentgen Ray is absolutely essential. It is not a thing which is "nice to have," and "of value in some cases." The X-Ray is absolutely necessary. Dr. Billings says: "The X-Ray film should be used because by no other method can one know the condition of the alveolus and the roots of the teeth." Dr. Moody offers the comforting statement that "if the X-Ray film is properly made, it is absolutely pathognomonic, provided it is correctly interpreted." Visual inspection, transillumination, instrumental examination, tapping the teeth with a hammer or touching them with ice, are all inadequate to reveal the pathology around the teeth or in the accessory sinuses, altho any one of these methods will sometimes suffice. The nerve pulp of a tooth may be dead and the tooth painless; alveolar abscesses may be painless and yet as dangerous as a carbuncle. Furthermore, the pain may not be in tooth that is involved. Every doctor or dentist who has used the X-Ray in this connection will witness to the statement that there is no other means of diagnosing the infections in the alveolar processes. With hardly less emphasis, it can be stated that many cases of antrum, ethmoid, frontal or sphenoid disease cannot be correctly diagnosed or properly treated without the aid of the roentgenologist.

Second: Having found an abscess, pyorrhea, or diseased sinus, you have only a potential source of metastatic disease. Many conditions, if investigated, will be found to have two, three, or more, adequate etiological

foundations. For example, a patient with an optic neuritis may give a positive Wassermann, positive gonorrheal complement fixation, and show an infected antrum. It is an inadequate diagnosis to conclude that the first condition found is the cause of the disease in question. Finding an abscess in the jaw is not sufficient, without cultural confirmation of the organisms present, and other laboratory examinations.

Third: The proper relation between the patient, his physician and his dentist, became an important matter the moment the connection between septic teeth and systemic disease became evident. This relation has three phases, as it presents itself to patient, physician or dentist.

From the standpoint of the patient, the physician is the medical advisor and is held responsible for everything which affects the general health of the patient. Wherever the condition of the teeth endanger the general health, it is the inescapable duty of the physician to watch and govern the treatment of that condition, until it no longer is a menace to the patient's health.

From the standpoint of the physician, it is his business to make the diagnosis on the teeth, with the aid of the roentgenologist and indicate to the dentist which teeth he considers are dangerous to the health of the patient, and in what way they are dangerous. The pathology of alveolar infection is no different from the pathology of bone infection elsewhere, and the principles governing dental surgery are the same as those governing bone surgery elsewhere. It is the duty of the physician to assure himself that the dental surgery has been properly performed, to know that all root canals have been completely filled, that all pus foci have been sterilized and are healed or healing. Only by the X-Ray evidence of completely filled root canals and X-Ray evidence of new bone formation in old pus pockets, can either the dentist or physician be certain that the pathology has been corrected.

No one can blame a doctor, who takes this attitude, for being just as careful in selecting a dentist to treat his patient, as he would be in selecting an oculist for the eyes or a general surgeon to perform a hysterectomy on that patient. It is neglectful for the doctor to tell his patient to "see a dentist" and "have the teeth attended to," just as much so as it would be for him to say "see a surgeon and have that osteomyelitis operated on." Frequently an alveolar abscess is just as dangerous as a pus pocket in the tibia would be.

From the standpoint of the dentist, just as many and just as serious mistakes are made. The dentist occupies an anomalous position with regard to the practice of medicine, because oral surgery is no more a distinct specialty than are the fields of rhinology, ophthalmology or skin diseases. Many years ago, the medical profession committed the crime of ostracising the dental profession, and the time is rapidly approaching when we must humbly entreat them to come back home. Through many years of

misunderstanding, patients have been treated as if their teeth bore no relation, whatever, to the remainder of their anatomy. Now that the close connection has become so acutely apparent, we are gradually resuming our proper relations, not yet officially recognized. In effect, whatever it may be in name, this relation is that of a physician taking his patient to a consulting oral surgeon for special methods of treatment. However, the details may be worked out in individual cases, that is their proper and ethical relation. The diagnosis should be made, as far as possible, by the physician, completed, where necessary, by the consulting oral surgeon. The point to be remembered here is that this local diagnosis is not made by the physician for the purpose of ascertaining what treatment is to be given the teeth, but for the sole purpose of finding out the relation between local foci and the general health of the patient. So far as treatment is concerned, the dentist, having a superior knowledge of technic, should be allowed to administer such treatment as he thinks will best bring about the results desired by the physician. This may consist in opening canals and draining abscesses, treating abscess pockets by various means, amputation of roots of teeth, sterilizing abscesses with subsequent filling of canals, or extraction of teeth with subsequent treatment of the infection present.

Each profession has at least one legitimate cause for quarrel, with the other.

The medical profession is perfectly right in asking that the character and quality of the hidden dentistry be improved over that which was the rule even three or four years ago. Although the dental profession was many years in advance of the medical profession in sensing the importance of alveolar infections, its members have been woefully unscientific in treating such conditions. William Hunter gave the name "septic dentistry" to that class of work where crowns are placed on teeth whose canals are incompletely filled. There is nothing in pathology more inevitable than the development of abscesses around the apices of such roots.

The dental profession has a legitimate quarrel with the physicians for not giving them the information which a consultant should have. The treatment of alveolar pathology depends on its relation to general pathology, and the dentist cannot be expected to treat the patient with the proper regard for that relation unless he is informed about it. An abscess which has no connection with systemic disease can be treated leisurely, with regard for the tooth and cosmetic appearance whereas a similar condition containing virulent streptococci and with a probable or certain connection with metastatic lesions might require radical surgical treatment. The blame for unsatisfactory results must be laid at the door of the physician, when he withholds information from his consultant.



## ROENTGENOLOGY—A METHOD OF DIFFERENTIAL DIAGNOSIS OF GASTRIC SYMPTOMS.

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BY

CRUM EPLER, M. D., Pueblo, Colorado.

(Read before the 35th Annual Session of the New Mexico Medical  
Society, Albuquerque, New Mexico, October 12th, 1916.)

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Whenever a condition has been shown to be amenable to successful recognition, although that condition has been long known as a definite pathological entity, it receives renewed attention from the part of the profession most interested in its diagnosis particularly, and from the profession in general later on.

This has been shown to be the case with the organs of the head, chest, and abdomen, one after another—too numerous to mention—and has been observed especially to apply during the past few years to the study of the alimentary tract.

Today we will busy ourselves with a method in an effort to differentiate the confusing and uncertain symptoms associated with the stomach.

If we content ourselves with the classical text-book recitation of the symptomatology of gastric diseases, we are believing that by history and laboratory findings the diagnosis is quickly and properly made. But if we will follow these same cases to the table and dead-house, I am sure we will be chagrined, though convinced that the history and symptoms are only true to pathology in a small percentage of cases.

I would not have you understand that this paper makes an attack upon the typical case, for it does not, but I would that you appreciate that the classical case is a rare species. If it exists at all, it is incidental to a very short period during the course of trouble, certainly not often observed in its incipency and most surely not during the long tenure of chronicity.

Neither am I decrying history, physical signs, laboratory or any other method, because I fully appreciate their great worth, and constantly use them in my diagnostic work, but I am endeavoring to set forth the importance of roentgenology as a differential method in sifting the true pathology out of the jumble of symptoms that are daily poured into our ears.

Barring cases of acute trauma from escharotics, acute pancreatitis and acute appendicitis, it is doubtful if we ever see an incipient case of abdominal disease manifested by gastric symptoms. This is true because the patient will seldom recognize the very early symptoms, and if he does he will give but little heed to it until it has progressed to a stage where it can safely be classified as subacute.

This brings us then to the period in the progress of whatever disease exists, when the patient complains of stomach trouble and refers all his symptoms to that organ.

Pain is the first symptom complained. It may be localized or it may be indefinite and the patient unable to give a clear description of its position. Nausea or vomiting or both is the next most prominent of symptoms. Around these two will be associated all history and signs of disease that the patient is able to give you.

The stomach itself is only heir to about five conditions of gross pathology, and yet the most salient symptoms of all these five are pain and nausea. The duodenum is afflicted with but few troubles, yet the main symptoms are pain and nausea. The gall-bladder comes in for its share of infectious foreign bodies and new growths, and still its main symptoms are manifest by pain and vomiting. The small intestine may have its lumen partly constricted and held from its great latitude of motion by a Lane's kink, still the symptoms that the patient most complains of are pain and uneasiness in the stomach such as nausea and sometimes vomiting, the colon constricted by Jackson's membrane, immobile cecum, cancer of the large intestine or rectum, hepatitis, acute pancreatitis, et cetera, to say nothing of the chronic appendix and so on, ad infinitum—all have their gastric manifestations in the two cardinal symptoms of pain and nausea or vomiting or both.

Every physician recognizes these facts. The small boy who has too many green apples has pain and nausea, the infant who has over fed cries in distress until the stomach is emptied by emesis; the case of migraine with her toxic system complains of an indefinite pain, and hours of vomiting.

When the patient comes in with a history of stomach trouble for a longer or shorter period, he will relate many symptoms, some pertinent and many not, but the main one is pain. It will then be necessary to institute physical examination, laboratory methods, etc., to differentiate and pick out the one of the many causes setting up the symptoms so common to a great many ills. Of course there are other symptoms besides pain and ill stomach that are not so common to a great number of conditions, but surely there are no pathognomonic symptoms amongst them.

It has been said that the stomach is the alarm box of the abdomen, giving the signal for the fire elsewhere. This seems to be true, but in that it gives the same alarm for all fires, one must look askance if the diagnosis is not missed. We may criticise the stomach for not having a complete and different set of symptoms for the ills of each organ, but we must not accuse it of being sick every time it informs us that its neighbor is in distress. When symptoms so common to a number of diseases are present, it is not sufficient to say that there are indications to enter upon this or that procedure, for the determination of the location of the pathology is as essen-

tial, as it is to know that pathology exists. It is of prime importance to know what pathology exists, how extensive, and where located before any remedial procedure is instituted. This can readily be appreciated by the following illustration. Patient 36, nurse by occupation, began losing flesh, lost her appetite; became nauseated, began vomiting food; then was unable to even retain water; complained of pain in the left costo-vertebral angle, a spot the size of a silver half-dollar; laboratory analysis of the stomach contents showed nothing except an excess of hydrochloric acid varying from 40 to 60. X-Ray examination showed a normal stomach, intestinal tract and gall-bladder region. It determined a deposit in the abdominal cavity to the right and over the transverse process of the third lumbar vertebra, which was slightly movable. Pyelography of both sides showed the kidneys to be normal. Operation proved this to be a calcified deposit in the greater omentum. Patient made an uneventful recovery free from all gastric and pain symptoms. To have treated this case by any method without roentgen diagnosis would have been sheer folly, unscientific and without relief to the patient.

Out of nearly five hundred cases that have come to me during the past three years for diagnosis of gastric symptoms, 21 per cent have proven pathologically true to symptomatology. Many of these were advanced cases of cancer of the stomach, liver, and colon; a few of acute ulcer of stomach with bleeding, and a few whose symptoms did not mask the pathology beyond recognition. 42 per cent were chronic appendices, some associated with stomach disease and some not; 15 per cent were duodenal complicated and uncomplicated; 3 per cent were gall-bladder diseases usually complicated with adhesions and the duodenum. The remaining 19 per cent were covered by pericolic membranes, immobile cecum, Lane's bands, pathology of the kidney, hepatic diseases, etc. These percentages are taken from the histories of roentgen diagnoses. Many of them have been operated, and in cases where reports of surgical findings have been received by me, the X-Ray diagnosis has been correct in 82 per cent of all pathology diagnosed. My twenty years of surgical experience has convinced me that all methods of diagnosis exclusive of the X-Ray will fall far short of this.

It must be acknowledged that gastric symptoms do not always arise from the stomach or part of the stomach of which they are suggestive, in fact they are more frequently the reflex wail of the stomach during the disability of some closely associated abdominal viscera; further the laboratory findings are not always in accord with the gastric pathology, even when it exists, and seldom of great value when the gastric symptoms are reflex, such findings are important, but seldom to be relied upon unless either frequently made or made by the fractional method, and even then the findings will vary according to the reflexes of the stomach, so that their worth is lessened unless in the hands of a diagnostitian who is able to make them himself. Personally I am inclined to use the gastric analyses as a comparison to my roentgen diagnosis rather than an adjunct. One of the



noticeable things about the symptoms of gastric disease is the absence, sometimes, of any symptom of such a grave condition as perforating ulcer until the ulcer has become entirely perforated and the patient is stricken down without warning. After all methods have been used, and the diagnosis has been or has not been made, whether it be located in the stomach or elsewhere, whether it is a simple case true to type, or one so confusing as to be in doubt, the roentgen method should be used, because by that method in proper hands the differentiation of pathology can not only be made but the exact location and extent known.

Now the remainder of this paper was intended to be shown by slides. If you will bear with me a few moments, I will call to mind some of the histories of the slides which I cannot give you.

I. Patient 35, female, seamstress by occupation, unmarried. Three years ago complained, in her words, of "stomach trouble." Had various diagnoses made, from gastritis to possible ulcer of the stomach, ulcer of the duodenum, cancer, and several other suggestions.

She was referred to me by one of the physicians in my town, to determine roentgenologically what the trouble was. I will say in addition to that he sent me the laboratory findings, both of stomach contents two or three times made, as well as a urinary analysis and report of Wasserman. The laboratory findings after Ewald breakfast showed about this: Free hydrochloric acid, 35; total acidity, 68; no blood; no organic acids, excepting those mentioned. Urine normal, except for some indican. Wasserman negative.

In connection with this, I desire to mention some of the symptoms that this patient had. As I said, she was a seamstress, working at her business all day. At about five o'clock each morning—this history comes from her, very carefully taken by myself—she would be awakened by pain and distress in what she called "the pit of the stomach," and the pit of the stomach in this particular instance was an area which radiated around the navel, usually near to the right side and above. She had no nausea, she had no vomiting. This pain and distress would last for a period of about five hours. After ten o'clock in the morning it would disappear entirely, and would not occur again until the next morning. She had lost about 15 pounds in a period of 10 months.

Roentgen diagnosis in this case was made, and I dare say no one in the room can make the diagnosis from the history given and yet it is simple. Roentgen diagnosis of this case was indurated ulcer of the pyloric end of the stomach on the lesser curvature and the posterior wall, encroaching to a very slight degree upon the ring; adhesions between the second portion of the duodenum and the transverse colon; chronic appendix, small and adherent.

This case was referred to me and operated by Dr. H. A. Black, and his operative findings were: Chronic indurated ulcer at the place mentioned;

adhesions of the periappendicular portion of the duodenum; and a small appendix, probably not chronic, which he thought was congenital.

II. The next was a case of duodenal ulcer. Barber, aged 36, gave history of complaining of indigestion, as he put it, for three years past. Had lost about 25 pounds in the last 15 months in weight. His pain came on, sometimes immediately after eating, sometimes an hour after eating, and sometimes two hours after eating. He had no through and through pain. He had no hunger pain. Was constipated to the degree that he had to take physic every night.

Laboratory findings: Slight degree of hyperacidity, bile, otherwise normal; urine normal; Wasserman negative; blood count, 3,800,000 reds and 9,000 something whites, as I remember it.

This diagnosis was made by roentgenological methods, or rather differentiation in the case, and it was found that this man had an ulcer of the duodenum and a patent pyloric ring. This man's stomach emptied in two hours and a half normally.

Was operated, and the findings were verified.

The next case: Farmer's wife, 28, married 9 years, had never been pregnant. Had done the housework on a small ranch, cooking, etc. Was awakened one morning about two or three o'clock sick at the stomach and vomited the evening meal of the night before. She was continuously nauseated and vomited, though she was kept on her feet by the physician for a week, at the end of which time she had to go to bed on account of not being able to retain food and weakness.

The physician suspected that she was pregnant, but, as he said, he eliminated that and referred her to me for diagnosis. This was two weeks after she was awakened in the morning that she came to me. She came on a stretcher. She was given the ordinary opaque meal, with barium in this instance, and, fortunately, retained it.

Fluoroscopically the stomach, particularly the pyloric end, showed some filling defects, but never alike. The diagnosis was made of a normal stomach and normal duodenum, and by virtue of a dilated caput duodenalis, the appendix was suspected.

Her physical signs showed a soft abdomen, no rigidity of muscle whatsoever, no temperature. The roentgen ray findings showed that she had a chronic appendix, tied just as you would tie a club bowknot so to speak. When it was suggested to her that her trouble was probably all appendicial and that an operation was advised, she declared that she had never had a pain in that side in her life, which was probably true. Had had typhoid 12 years before. Operation was performed, patient recovered and has not had any symptoms in the two years and a half since from my personal observation.

Another case which I will mention is a rather unusual one of an annular carcinoma of the stomach. This diagnosis was suspected by the clin-

ican; from a roentgenologic standpoint, it was proven; and in the dead-house, the proof was conclusive. The point I am trying to make here is that the laboratory findings do not always agree with the pathology found, if any, and in this case four months and a half before the man died he had 21 as his free hydrochloric acid and his combined was 45.

I mention these cases as the irregular ones, and in that they are the irregular ones they are the more necessary to be diagnosed, and I know of no other way to differentiate them after all methods have been used than the roentgen-ray. (Applause.)\*

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\*Discussion follows paper of Doctor Wylder.



## CERVICAL SUSPENSION FOR RETRODISPLACEMENTS AND PROLAPSE OF THE UTERUS.

BY

DR. HUGH WHITE, El Paso, Texas

(Read before El Paso County Medical Society January 5th, 1917.)

To the men working in gynecological clinics, the frequency of retrodisplacements accompanied by more or less procidentia is very evident. Bryant & Buck in American Practice of Surgery say: "Retrodisplacements are noted in nearly one-fifth of gynecological cases, constituting 17.75 per cent of the combined materials of Winckle, Loehlin & Sanger."

The generally accepted theory of the medical profession is that the principal cause of retrodisplacements is a torn perineum, but in 184 gynecological examinations in the El Paso County Clinic, I found 19 retrodisplacements in multiparae and 14 in nulliparae and as the majority of the women applying to the clinic are multiparae, it would seem that the condition is about as common in the one class of patients as in the other.

We often see women with the perineum torn back to the sphincter ani muscle and the uterus in a normal position, or if with a speculum retracting the perineum we pull the cervix down, when we release the cervix the uterus returns to its normal position with the perineum still retracted. So evidently in the majority of cases we will have to look to another source than a lacerated perineum for the cause of retrodisplacement.

This leads me to believe that the real cause of retroversion is either a short anterior vaginal wall pulling the cervix forward, or long loose utero sacral ligaments allowing the cervix to sag downward and forward. We have seen the latter cause demonstrated by the old pessary which by holding the cervix up in place causes the uterus to lie in a normal position.

There is a paucity of statistics on this subject and all of the literature accepts without comment that the condition is more frequent in the woman who has borne children. However, Mann in American System of Gynecology partially substantiates my position by saying: "I am convinced from careful clinical study that the opinion which is shared by the preponderating majority of gynecologists that retroflexio is rare in the virgin and that we must seek the causes of the origin of nearly all cases of reflexio in the puerperal state is not correct," and the same authority quotes Schultz as saying: "The loss of the posterior fixation is quite particularly the cause of the backward displacement of the fundus uteri."

When the uterus is retroverted, however, further descent is prevented by an intact perineum, but if the perineum is torn we have an extension of the condition in a prolapse. So we might say the cause of a prolapse is a

retroversion with a lacerated perineum. Of all the operations that have been suggested for the relief of these conditions, only two have attempted to fasten the cervix up in place—one, shortening of the utero sacral ligaments, and the other opening the top of the vagina and dissecting up between the bladder and uterus and coapting the tough tissues in the bottom of the broad ligaments in front of the cervix. All of the others have been attempts to hold the fundus over in the normal position, but have left untouched the sagging cervix, and I think have missed the real cause of the trouble. The fact that none of the operations for the relief of this condition have been entirely successful is demonstrated by the fact that there have been well above 100 operations devised for its relief. (Crossen—Diseases of Women.)

I recently saw a patient on whom I did a ventral fixation two years ago for prolapse of the uterus and although the fundus is still in contact with the anterior abdominal wall, the cervix has sagged down and become so elongated that it is apparent at the vulvar opening.

For years I have felt that we were attempting to fasten up the wrong end of the lever, as it were, and a few months ago while holding a post-mortem on a case in which there was a prolapse, I found that by fastening the anterior fold of Douglas Cul de Sac to the infundibulo pelvic ligaments and thereby lifting up the cervix, the uterus lay over in a normal position, and this seemed to be a solution of the problem.

The technique is as follows:

Open the abdomen in the median line, catch the fundus of the uterus and pull it well forward, then catch the cervix at the posterior vaginal attachment with a double tenaculum and lift it up and remove the tenaculum from the fundus; next, with your assistant holding up the cervix, pick up the left broad ligament and with a curved needle pass a silk ligature through the clear space underneath the infundibulo pelvic ligament (which is the outer free border of the broad ligament) just below the ovary, then pick up the vaginal wall at its posterior cervical attachment with the same needle, being careful not to go through into the vagina; next pass your needle through the clear space in the right broad ligament in the same position as you did on the left side; then draw your suture up and tie, bringing your three points in contact.

The first picture shows the suture in place, but not tied, and demonstrates the three points and the position of the fundus forward underneath the symphysis.

The second shows the suture tied and demonstrates how the broad ligaments come up around the uterus and hold it, as it were, in a sling. After tying the suspension suture, fasten the sides of the broad ligaments below the tubes to the sides of the uterus with a continuous catgut suture to obliterate the open space between the two, through which a loop of intestine might find its way.

This operation, of course, ties off the ovarian artery, which is included in the silk ligature, but as the anastomosis with the uterine artery is so free and the infundibulo pelvic ligament contains so much more muscular and fibrous tissue than the broad ligament lower down, I think it is justifiable.

Cervical suspension lifts the cervix upward and backward and holds it in this position and the uterus lies over on the bladder and the pressure of the intestines on its posterior surface tends to hold it in this position, so that there is not much tension required to hold the cervix up.

The uterus is perfectly movable and can rise and fall with the filling and emptying of the bladder, and if pregnancy should take place, there is nothing to prevent its rising normally in the abdomen. The dilatation of the cervix also during parturition would naturally force our new formed ligament into the hollow of the sacrum out of the way.

Case No. 1, Mrs. S. C.:

21 years old. Married 2 years. Never been pregnant. Menstruates freely 6 days, with severe cramps. Backache continuous, but worse at menstrual periods.

Cervical suspension done at County Hospital in October, 1915. At last consultation in January, 1916, patient reported complete relief of symptoms and on bimanual examination cervix was felt high up in posterior cul de sac and uterus well forward resting on bladder and anterior vaginal wall.

Case No. 2, Mrs. R. S.:

Has one child 4 years old. No abortions. Has been having severe dysmenorrhea every month, lasting 4 to 10 days, during which time she has been compelled to stay in bed and take opiates. Trouble dated from birth of child. Retroversion of extreme degree with beginning prolapse.

Curettage and cervical suspension at County Hospital in October, 1915, with complete relief of symptoms and perfect position of the uterus resulting.

Case No. 3, Mrs. K.:

36 years old. Mother of 3 children, youngest 18 months. Severe backaches, dysmenorrhea, constipation and dragging sensations in pelvis. Lacerated perineum with beginning prolapse. Retroversion and subinvolution. Perineum repaired and cervical suspension done for Dr. J. M. Richmond at Providence Hospital Nov. 16, 1915. One month later on examination uterus found in an over-corrected position, with cervix high up so that it could just be reached with two fingers in the vagina.

Three months after operation the patient reports entire relief from all her symptoms.



**Case No. 4, Mrs. C. F.:**

40 years old. Mother of 5 children, youngest 7 years old. Pains in back and legs, pulling sensation in abdomen, irritable bladder, with frequent urination. Retroversion and prolapse of uterus, with cervix showing at vulvar opening. Rectocele and cystocele. Perineum torn back to sphincter ani.

Cervical suspension done at County Hospital Jan. 23, 1916. The perineum was not repaired. Feb. 13, 1916 on examination uterus was found in normal position, cervix high up in vagina. Disappearance of cystocele and a diminution in size of rectocele.

I present this as a preliminary report, in the hope that others of the profession will take it up.

**DISCUSSION.**

**Doctor Hugh Crouse:**—There is no doubt that this operation is an improvement over many others for the purpose. There is no one operation that will meet all the needs. I believe that this operation is preeminently indicated where there is great looseness of the parts, and the uterus can be dragged out of the abdomen. I think that it would be better to take up the slack in the peritoneum and the round ligaments too.

**Dr. James Vance:**—The operation looks very good, but I do not like the use of the silk ligature. I dislike any non-absorbable suture. The essayist said nothing about denuding the musculature of the ligaments before tying, but I suppose that he does this as any peritoneal surfaces tend to pull apart.

**Dr. Paul Gallagher:**—There is a very similar operation to this in which the peritoneum is stripped back off the front of the uterus and then the round ligaments are brought forward under the flap and sutured to the cervix. Later the flap is returned to its place only a little higher on the uterus, and the redundancy clipped off.

**Dr. White (closing):**—The shortening of the utero-sacro ligaments do some of the work of this operation, but these ligaments are situated too low down to be able to give any lift to the cervix, which is so necessary. The redundant tissue is taken care of by the proper placing of the sutures. When this is done all the lower pelvic structures are put gently taut. It is then unnecessary to shorten the round ligaments as the weight of the intestines keeps the uterus in the proper position. As silk is used for the suture, there is no need to denude the surfaces.





See Page 46 for Technique  
DR. HUGH WHITE





See Page 46 for Technique  
DR. HUGH WHITE



Photograph of Case No. 1 Before Operation.  
DRS. W. L. and C. P. BROWN

## ANCIENT GUNSHOT WOUND OF FOREARM WITH EXTENSIVE SCAR FORMATION AND CONTRACTIONS.

BY

W. L. and C. P. BROWN, El Paso, Texas.

(Read before the El Paso County Medical Society, September 4th, 1916.)

D. M., aged 23 years. Nine years ago, accidental discharge of shot gun, entering front forearm just below the elbow, traversing the entire length of the forearm and coming out just above the wrist. The entire anterior group of muscles, blood vessels, etc., were greatly mutilated, and many shot were left in the tissues. He was under treatment for many months, but the wound healed finally, leaving him in the condition now shown in photograph.

The wrist was flexed at right angles to the forearm, and firmly fixed, not only by contraction of tendons, but also by contraction of skin and fascia. The forearm and hand were under-developed, and considerably smaller than the opposite one. Both extensor and flexor tendons showed some effort at action, on extension and flexion, but the hand was absolutely useless.

### *Operation.*

At operation, transverse incision was made just above the wrist joint, through the skin and fascia, also a long incision in the line of the old scar, up the front of the forearm, which extended almost to the elbow. All the anterior tendons that were left were firmly attached to this scar. The tendons were dissected loose from the scar tissue, and by the splitting method were lengthened four inches. It was necessary to do tenotomy of the flexor carpi radialis and flexor carpi ulnaris, before the hand could be straightened. After complete dissection of the tendons, skin and fascia, it was still impossible to completely extend the hand and fingers, because of contraction of the anterior capsule of the wrist joint. However, extension was so nearly complete that it was not even advisable to do a capsulotomy.

After suture of the lengthened tendons, the tendon of the flexor carpi radialis was thrown over to the midline and used to reinforce the line of suture of the flexor tendons. After straightening the arm an area three inches in length, and the entire width of the wrist, was left without skin. A flap of skin was raised from the anterior aspect of the abdomen, base down—the flap including a large amount of fat—and after being raised the fat was split off from the skin flap and the fat flap being slipped under the tendons and the skin flap with its fat sutured across the front of the tendons, the flap left attached at its base to the abdomen.



After carefully suturing in position, the arm was securely fastened with adhesive straps and bandaged. The flap was cut loose at the end of eight days, and sutured in place.

Practically primary union throughout. The wrist will be finally completely straightened by use of elastic bandage and splint. The flap has just been cut loose today and it is too early to see what the ultimate results will be, however, we have every reason to believe that he will secure a thoroughly useful arm.

*Case No. 2.*

*Re-Formation of Gall Stones Fourteen Years After Removal.*

Mr. G. F. H. Operated on 14 years ago for gall stones. A large number removed and gall bladder drained. Health was good for fourteen years, at which time he began to have attacks of gall stone colic again, and at the time of operation he had a phlegmonous gall bladder, full of gall stones.

This case is reported to show positively that gall stones will re-form where the gall bladder is left, after their thorough removal. We assume that they were all removed at the time of the first operation, because of the period of so many years without symptoms, and at any rate we know positively that some have re-formed, as so large a number could not have been left.

There are still certain authorities who state that they believe gall stones never re-form, once completely removed, though there have been a number of cases on record, like this, where is proved the contrary.

## MEDICAL PREPAREDNESS

A circular has recently been received from Dr. F. F. Simpson, Chief of the Medical Section of the Council of National Defense, presenting the correlated activities of the medical departments of the government, the Council of National Defense and the Advisory Commission, and the Committee of American Physicians for Medical Preparedness, setting forth the work that has been done up to this time and outlining what is now being done in the line of medical preparedness.

The circular is too long for complete reproduction in this issue but we give below a summary of the most important parts and refer those interested to Doctor F. F. Simpson, Council of National Defense, Washington, for further information:

### COMPONENT PARTS OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR MEDICAL PREPAREDNESS

**National and State Committees.**—In April, 1916, the national committee was constituted by the presidents of the American Medical Association, the American Surgical Association, the Congress of American Physicians and Surgeons, the Clinical Congress of Surgeons of North America, and the American College of Surgeons. That committee undertook the responsible duty of formulating plans whereby the civilian medical resources of the United States might be ascertained and co-ordinated for such purposes as might be required by the federal government.

The national committee appointed a state committee of nine men in each state of the Union. The presidents and secretaries of the various state medical associations are ex-officio members of their respective state committees. It was contemplated that at the proper time committees would be perfected in each county of the country. That time has now come, and county committees are being rapidly organized. The state committees are expected to select the county committees and to supervise their formation.

**Name and Personnel of County Committees.**—It is the policy of the Committee of American Physicians for Medical Preparedness that the various medical interests and activities of the county shall be represented on the county committees. This is to co-ordinate the interests and activities so that the medical profession shall be in position to aid in the national defense. That this plan may be carried out with uniformity and precision throughout the country, the various state committees have been requested to have all county committees bear the following distinguishing name, to wit, The Auxiliary Medical Defence Committee of \_\_\_\_\_ County, in \_\_\_\_\_ State, and to provide that the county committees shall include the following resident in the county: all members of National Committee of the Committee of American Physicians for Medical Preparedness; members of the state committee; representatives of the U. S. Army; representatives of the U. S. Navy; representatives of the U. S. Public Health Service; representatives of the state board of medical examiners; representatives of the state or city public health service; ranking medical officer of the National Guard; president and secretary of the local Medical Officers' Reserve Corps Association (if there be such organization); deans of medical schools; president and secretary of the county medical society; president and secretary of other important medical societies; medical director of the local Red Cross units, and other representative medical men.

### DUTIES OF COUNTY COMMITTEES

From time to time, specific duties will be assigned to the various state and county committees. These county committees are urged to take prompt action at this time in accordance with the following:

1. That these committees co-operate with the national and state committees of the Committee of American Physicians for Medical Preparedness to make available needful information regarding the civilian medical resources of their communities, and to co-ordinate civilian medical activities for prompt mobilization in case of need.

2. That they secure applicants:

(a) For the Army Medical Corps. For the full complement of troops already authorized by Congress, the regular army needs about 1,200 additional medical officers. If a million men are called, a corresponding increase will be required. (b) For the Medical Officers' Reserve Corps, for which from 20,000 to 30,000 medical reserve officers should be enrolled. (c) For the Naval Medical Corps, which needs about 350 additional officers. (d) For the Coast Defense Reserve Corps of the Navy, for which several hundred high class reserve medical officers are desired. (e) For the National Guard, such numbers as may be required to bring your local National Guard to full strength.

Physicians recommended for service in national defense must be of the highest type. Medical officers who go to field duty should be under the age of 45.

3. That they co-operate, individually and collectively, with the Medical Department of the Army, Navy and Public Health Service and with the Council of National Defense.

4. That they co-operate with the Red Cross in bringing that organization to the point of highest efficiency.



## BOOK REVIEWS

**Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1916.** Cloth. Price, postpaid, 50 cents. Pp. 87. Chicago: American Medical Association, 1917.

This volume contains the reports of the Council which were adopted and authorized for publication during 1916. It includes reports of the Council previously published in *The Journal of the American Medical Association* and also reports which, because of their highly technical character or of their lesser importance, were not published in *The Journal*.

In this volume the Council sets forth the reasons for the rejection of the articles which were examined and found ineligible for New and Nonofficial Remedies. It also explains why certain preparations included in previous volumes are not contained in the latest (1917) edition of New and Nonofficial Remedies. Physicians who wish to be informed in regard to the status of proprietary and unofficial remedies should have the volumes of the Council Reports, in addition to New and Nonofficial Remedies.

**New and Nonofficial Remedies, 1917,** containing descriptions of the articles which have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association prior to Jan. 1, 1917. Cloth. Price, postpaid, \$1. Pp. 412 + xxiv. Chicago: American Medical Association, 1917.

This book lists and describes the non-secret proprietary remedies that have been accepted by the Council on Pharmacy and Chemistry of the A. M. A. It also describes the newer non-proprietary remedies which give promise of some real value that have been accepted by the Council. Each description includes the chief facts physicians desire to know concerning composition, dosage, indications, cautions to be observed, etc. The book also contains general articles which compare the value of the proprietary remedies with the established drugs they are intended to supplant. Every physician who wants to keep abreast of the times should have a copy of this annual.

**The Prevention of Disease,** a popular book on keeping well by Kenelm Winslow, B. A. S., M. D., formerly Assistant Professor of Comparative Therapeutics at Harvard Medical School. 12 mo. of 348 pages. Philadelphia and London: W. B. Saunders Company. 1916, Cloth, \$1.75 net.

Doctor Winslow's "Popular Treatise" on Prevention of Disease, written for the layman, is a book that contains much information that should be given the public. We question, however, that it will serve its purpose for the reason that there is too much mention made of symptoms. Our experience has been that the ordinary layman, after reading such a work, is too prone to find symptoms that do not exist and to cloud his history when he does become really ill.

That the book will find a field of usefulness we do not doubt, but not to the extent hoped for by the author.

**Care of Patients undergoing Gynecologic and Abdominal Procedures,** before, during, and after operation by E. E. Montgomery, M. D., Professor of Gynecology in Jefferson Medical College, Philadelphia. 12mo. of 149 pages, with 61 illustrations. Philadelphia and London: W. B. Saunders Company. 1916. Cloth, \$1.25 net.

The title of this little book is rather misleading, as it contains chapters on general abdominal surgery, including intestinal resection and anastomosis, stomach operations, gall bladder operations, and operations upon the spleen and kidneys. These operations are much better covered of course in the larger volumes on surgery, and seem rather out of place in a book on gynecology.

The volume, as a whole, would be very satisfactory for nurses and students, but is too elementary to be of any value to the general surgeon. Even a beginner of surgery would wish to consult a volume of more extended information, or at least should do so, before he undertakes any of the operations described in the book. Consequently, it would mean a duplication for him to read this volume.

The great number and excellence of the illustrations showing the instruments necessary in the different operations, would be very valuable for nurses.

We note that the author advocates giving patients their cathartics 24 hours prior to operation, which we think a most excellent idea, and should be generally practiced as they are much less likely to have post-anesthetic nausea.

He advocates drainage of the Douglas' cul de sac through a post cervical incision into the vagina, instead of abdominal drainage, which certainly meets the mechanical features very much better, and should be more often practiced than is usual. Removing iodine from the abdominal wall before the incision is made, is also advocated on account of the intestines coming in contact with it and later causing adhesions. For those who do not completely protect the bowels from the skin, this is a most excellent idea. However, this contact should not occur under any circumstances if the skin has been properly protected with towels, fastened to the margin of the abdominal wound.

It is also noted that the author advocates the operator standing to the left of the patient while doing a laparotomy. This strikes us as being rather contrary to the general custom, and we imagine would be a question very greatly of habit or practice.

In the chapter on shock, a dram of adrenalin in salt solution given intravenously is advocated. We assume the author refers to the standard 1 to 1000 solution, under which circumstances we feel that a dram would be quite a liberal dose, given intravenously. Also the practice of giving saline solution under the breast should be discontinued and given in the axillary space, as mentioned in the same connection by the author. There have been a number of cases of sloughing of the breast from the practice of giving saline beneath it, which may have been due to too much pressure or too hot solution, either of which is always liable to occur where people more or less inexperienced are giving the solution during an operation when the surgeon's attention is attracted elsewhere. Consequently, we believe the practice should be discontinued.

The general information in the little book, on the whole, permits of little criticism, except we believe it to be rather too elementary in its character to be of any special interest to the surgeon who undertakes to do abdominal work.

—W. L. B.

## PROPAGANDA FOR REFORM.

**Effect of Opium Alkaloids on the Ureters.** According to D. I. Macht morphin and the opium alkaloids having a similar constitution increase the contraction and produce a greater tonicity of the ureter, whereas papaverin and the opium alkaloids constituted similarly produce a slowing or total inhibition of the contraction and relaxation of the tonus. In opium and pantopon, which contains the total alkaloids of opium, the effect of the morphin group preponderates. Ureteral colic is due to spasmodic contractions of the ureter caused by the irritating calculus and hence the use of papaverin or opium is more rational than that of morphin. Furthermore, the slighter toxicity of papaverin, its tonus lowering power and its local analgesic properties suggest its local application in spasmodic conditions of the ureter. (Jour. A. M. A., March 3, 1917, p. 719.)

**Dating of Biologic Products.**—For the protection of the consumer as well as the manufacturer, the Council on Pharmacy and Chemistry has adopted a rule requiring that serums and vaccines and similar products to be accepted for New and Non-official Remedies must bear on each package the date of its manufacture in addition to the date required by federal law. The practice now followed by manufacturers of placing on the containers of biologic products the date beyond which these agents are not to be regarded as dependable (though in accordance with the federal law) has not been satisfactory. Except for diphtheria and tetanus antitoxin, in general there are no methods for determining the potency of serums and vaccines. At the present time, for the same material, one manufacturer will fix an expiration date of four months, others one year or even eighteen months. Obviously this lack of uniformity is unfair to the manufacturer who endeavors to supply a product as fresh as is commercially practicable and it also may lead the physician to form a false opinion regarding the potency of certain biologic products. The new rule of the Council will enable the physician to know the age of a given product when it reaches him and will permit him to judge whether or not it has been kept unduly long. Moreover, it will prove not only helpful to the conscientious manufacturer and the physician but will also safeguard the patient. (Jour. A. M. A., March 3, 1917, p. 728.)

**Another Shortage of Salvarsan.**—The indications are that the supply of salvarsan and neosalvarsan in this country has again reached the point of exhaustion. Congress, which made our patent law, has the power to suspend the patent on any preparation that the patentee is unable to, or does not supply, when such suspension is in the interest of public health, and it should suspend the salvarsan patent. In the meantime it is to be hoped that the Dermatologic Research Laboratory of Philadelphia will again supply the product as it did during the previous salvarsan shortage. (Jour. A. M. A., March 10, 1917, p. 785.)

**Rheume Olum.**—The Council on Pharmacy and Chemistry reports that Rheume Olum (The Rheumeolum Chemical Co., Seattle, Wash.) is said to be composed of camphor 7 per cent., chloral hydrate 7 per cent., menthol  $2\frac{1}{8}$  per cent., methyl salicylate 25 per cent., oil cajuput  $2\frac{1}{2}$  per cent., oleoresin capsicum, lanolin, white wax, "qs." The Council found Rheume Olum unacceptable for New and Nonofficial Remedies because the amount of the potent oleoresin of capsicum was not declared, because unwarranted therapeutic claims were made, because the name was nondescriptive of its composition and therapeutically suggestive and because the fixed formula was considered irrational. (Jour. A. M. A., March 17, 1917, 865.)

**Control of Intestinal Bacteria.**—A recent investigation indicates that the direct feeding of bacterial cultures of lactic acid producing organisms had almost no influence on the intestinal flora. On the other hand the administration of milk sugar (lactose) brought about a marked change in the intestinal flora. It appears therefore that the beneficent action of milk cultures is dependent on the lactose and not on the bacteria which they contain. (Jour. A. M. A., Mar. 24, 1917, p. 918.)

**The Sargol Case.**—The exploiters of Sargol, the get-fat-quick nostrum, were found guilty of fraud and were fined \$30,000 after promising that the business would be discontinued. Sargol was made by Parke, Davis & Co. at a price of 53 cents to 78 cents per thousand tablets. Sargol was stated to contain extract saw palmetto, calcium hypophosphite, sodium hypophosphite, potassium hypophosphite, lecithin,



extract nux vomica. The trial is said to have cost the United States over \$100,000. Although the business was palpably fraudulent, although the claims made for the nostrum were palpably false, the defendants were able to employ physicians to go on the stand and swear that Sargol was a "flesh builder" and "bust developer." (Jour. A. M. A., Mar. 24, 1917, p. 927.)

**Betaine Hydrochloride.**—It contains 23.8 per cent absolute hydrochloric acid and 8 grains corresponds to about 18 minims of diluted hydrochloric acid. In solution betaine hydrochlorid dissociates into hydrochloric acid, but it is not so efficient in aiding the action of pepsin as an equivalent amount of hydrochloric acid. (Jour. A. M. A., Mar. 24, 1917, p. 931.)

## MEDICAL LEGISLATION IN ARIZONA

The Third Arizona Legislature, recently in session in Phoenix, considered an unusually large number of bills of more or less interest to the medical profession. Of these only three passed, and one of these was designed to meet an emergency in Mohave County. This bill permits the admission of patients, other than indigents, to County Hospitals, when they can pay for their care, and is intended to apply to counties where no other hospital, except the County Hospital, exists.

House Bill No. 55, abolishing the common drinking cup and common towel in all public places (barber shops, lavatories, etc.) passed and is now a law.

The Legislation of most interest to the medical profession of the State was the amendment to the Medical Practice Act, which authorizes the Examining Board to make contracts of reciprocity with other states and to extend an examination of a different character to practitioners graduating prior to 1901. There is an apparent conflict in this bill which will, unless removed by legal interpretation, nullify the reciprocity clause. The bill, after its passage, was examined by the Committee on Public Policy and Legislation of the State Association, at the request of Governor Campbell, and approved by them, so far as its intent is concerned.

Bills of more or less merit introduced and failing to pass were the following:

S. B. 5, for the Establishment of a State Hospital for Disabled Miners.

S. Bills 32, 33 and 34, for the Conservation of Vision. These were introduced by request of Dr. Ancil Martin, who represented the American Medical Association's Committee on the Conservation of Vision. These meritorious bills never came to a vote.

S. B. 82, for the Establishment of a Home for Feeble Minded. This was a carefully prepared and very desirable piece of legislation, which passed the Senate unanimously and was not taken up by the House, owing to lack of time, else it would have passed that body also.

S. B. 110, for the Establishment of a Ward for the Criminal Insane at the State Prison. This bill, introduced by Senator Ferguson of Santa Cruz County, deserved passage, but was not taken up by the House, after passing the Senate. It aimed to establish a separate ward for the criminal insane, at very little cost.

S. B. 126, Amending the Statute Regulating the Practice of Dentistry. This vicious amendment failed to pass. It is of interest to us

because the medical and dental professions are too closely allied for either to remain passive when the high standards of the other are being attacked.

H. B. 70, Creating a State Board of Optometry. This deserves discussion by the State Association.

H. B. 140, Providing for the Reorganization of the State Board of Health. This bill never came to vote.

This collection of legislative ideas illustrates one thing, at least; that is, the inadvisability of introducing such bills without the approval and co-operation of the proper Committee of the State Medical Association. The bills introduced by Dr. Martin were sponsored by the American Medical Association, but all the other bills should have been passed on by the State Association before their introduction. The bill for the Establishment of a Home for Feeble Minded was the only bill introduced which was sanctioned by the Committee on Public Policy and Legislation and, of all those enumerated above, most deserved passage.

—W. W. W.

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Dr. W. W. Wilkinson, of Phoenix, has recently retired from general practice to enter the special field of electro-therapy and deep X-Ray therapy. Dr. Wilkinson has been engaged in electro-therapy, in conjunction with general work, for many years. During the past fall he studied under Dr. Skinner, of Kansas City, and with other roentgenologists of the east and Pacific Coast, and concluded to limit his practice, in the future, to the fields mentioned.

So far as we know, Dr. Wilkinson is the first man in Arizona who has properly equipped himself, by study and apparatus, for deep Roentgen therapy, requiring, as it does, special technic and powerful transformers. It is to be hoped that he will receive the encouragement he deserves in his special work.

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### MARICOPA COUNTY (ARIZONA) NEWS

At the March 10th meeting, the Society had the privilege of a talk by Dr. E. Fletcher Ingals, Professor of Diseases of the Chest, Nose and Throat at Rush Medical School. Dr. Ingals gave an impromptu resume of his observation, as a member of the Board of Trustees, of the early struggles of Rush in its efforts to make of itself a first-grade school. Following this, he digressed to the subject of Angina Pectoris, and gave an interesting lecture on this subject.

At the meeting, held March 24th, the Society was again favored, being addressed by Dr. Maximilian Herzog, Chief Pathologist for Cook



County Hospital, who is visiting Dr. Sweek of Phoenix for a month. Dr. Herzog, as is well known, is one of the foremost pathologists of the country, is a fascinating speaker and was given a very cordial welcome by the Society.

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#### MOHAVE COUNTY (ARIZONA) NEWS

The Mohave County Medical Society reports the death of their pioneer member, Dr. Alexander M. Cowie, at Kingman, March 18th, from bowel perforation.

Dr. Cowie has lived and practiced in Kingman for 22 years; he was born in Canada in 1864; graduated from McGill University in 1887, and for eight years was ship surgeon in the Merchant Marine, coming to Kingman in 1895.

At the time of his death, and for many years previous, he was secretary of the County Society and County Physician. The medical profession of the entire state will join with his confreres of Mohave County in their sorrow at the death of another of our pioneer physicians.

## DR. JOHN W. TAPPAN

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Office Hours: 11 a. m. to 1 p. m.  
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# Southwestern Medicine

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VOL. I

El Paso, Texas, May, 1917

No. 5

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## ROENTGEN THERAPY.

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BY

W. W. WILKINSON, M. D., Phoenix, Arizona.

(Read before the meeting of the Arizona Medical Association, Douglas, Arizona, April 18, 1917.)

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Scarcely any fact in regard to roentgenology is more known to medical men, then that unprotected X-ray workers become sterile. In a number of States laws have been passed providing for the sterilization of various classes of defectives, and surgical methods are likely to be superseded by roentgenization as safer and more humane.

While we recognize the value of the X-ray in sterilizing defectives there is another class to whom this treatment is a great boon, a class in which we all have a very deep personal interest, and a class to which we are, fortunately, more closely related; I refer to our mothers, wives, and sisters who are approaching the menopause. Women have always borne peculiarly heavy burdens and it is, indeed, a happy day when we, as physicians, are able to free them from a burden that has become increasingly heavy as civilization has advanced. Women quite generally approach their fourth decade with considerable dread and apprehension on account of the stormy time which many of them experience at this period. The hot flushes, nervousness, sleeplessness, irregular menstruation with dysmenorrhea and menorrhagia; the psychic disturbances, even to the sad sequence of an unbalanced mind in some cases, are symptoms which cause dread and apprehension, because we as physicians have given them inadequate relief. Here, roentgen therapy is supreme, and, by destroying the remaining Graafian follicles we can, in a short time, relieve all these symptoms. Happily only the Graafian follicles are destroyed, and the important internal secretion of the ovary is not interfered with, when cases are not overtreated. This statement is true for women over forty. More massive doses are required to destroy all the ovarian follicles in younger women, and the destruction of the ovarian function is, in these cases, complete. Ovulation being impossible there can be no menstruation, menorrhagia or dysmenorrhea and the nervous and psychic symptoms promptly disappear. The ability to bridge physical and mental strain of the climacteric is a notable triumph in the healing art, which, when generally employed, will add materially to the prestige of our beloved profession.



It is doubtless desirable to sterilize most tuberculous married women; also unmarried women who have lung trouble, where menstrual disturbances are a factor in preventing recovery; likewise women who are having frequent miscarriages or too many children. Some cases of specific infection, nymphomaniacs and masturbators might be included; also cases of deformed or contracted pelvis.

A lady of my acquaintance, who is in her eightieth year and who is still able to do some general nursing, says she never had a well day until after change of life, which occurred in her thirtieth year, and since that time she has scarcely had a sick day, and has led an exceptionally energetic life. There are married women, with menstrual difficulties, of impaired health, who have never become pregnant, to whom a permanent cessation of menstruation induced by raying, would bring health and happiness.

Dr. Sidney Lange, of Cincinnati, reports fifty cases of artificially induced menopause in women of various ages. One unique case is that of a young woman who had epileptic seizures at every menstruation and was cured of her fits by roentgen sterilization. Dr. Lange, in answer to a letter of inquiry as to the condition of patients immediately following treatment, wrote me as follows: "None of our cases had any psychic disturbances following the treatment. The greater percentage had hot flushes, but these subsided after a few weeks time and all of the patients were much improved both mentally and physically after the artificial menopause. Those cases in which there were strong symptoms at the time the treatment was undertaken, experienced a disappearance of these symptoms after the artificial menopause was established.

#### TUBERCULOUS ADENITIS.

In addition to destroying the Graafian follicles of the ovary, when indicated, we would call attention to the fact that the lymphatic glands are very susceptible to the action of the roentgen ray. It is the best treatment for tuberculous adenitis. Dr. Russell H. Boggs in a paper on this subject says, "Striking results are frequently obtained in large glandular masses even when suppurating or about to break down. Many of these cases are as permanently benefited as cases in which the glands are only of small size. These facts suggest that in the destruction of tubercular tissue autogenous vaccines are set free, which are superior to tuberculin. This probably accounts for a tuberculous process disappearing in one part of the body when a tuberculous mass is rayed in another part. Several times I have had tubercle bacilli entirely disappear from the sputum of a patient being rayed for tuberculous cervical adenitis."

Shultz says, "Tubercular glands are similar in specific gravity to the normal skin. The high absorption capacity of these glands is evidently connected with a high specific sensibility as it is often astonishing how quickly even deepseated tubercular glands react to small doses of rays. I observed in a series of three cases of tuberculous glands in which the con-

nection between the skin surface and the gland was established by a fistulous sinus, that after a few radiations the glands were pressed out through the sinus, just like the passage of the head at birth. This movement of the gland I could only explain to myself by an exuberant growth of the deep-seated connective tissue."

#### LEUKEMIA.

Not only lymph glands but all lymphoid tissues are very susceptible to raying. Hence, lymphatic and splenomedullary leukemia, (especially the former type) are benefited by thorough deep roentgenization. This is to be expected, as sarcomas are quickly destroyed by raying, and leukemia has been called blood sarcoma. Repeated relapses usually occur and respond to treatment, but in the end the disease and not the physician is the victor.

#### HODGKIN'S DISEASE.

We believe no up-to-the-minute practitioner will attempt to treat Hodgkin's disease without roentgen therapy. When cases are rayed reasonably early, improvement with arrest of disease results with some cures. Dr. Arthur Fenwick Holding and Dr. Samuel Brown of New York, in their article on Hodgkin's Disease, which appeared in the March number of the Journal of American Medical Association say: "We feel that particular emphasis should be laid on the necessity of extensive roentgen treatment in all of these cases immediately after the diagnosis is established. The roentgen rays should be given over all lymphatic structures of the body, including the mediastinal and abdominal lymph nodes, thus giving a general action which, in proper dosages, we have invariably found to improve the patient's general physical condition instead of weakening him as the extensive surgical operations did in the fully developed stage of the disease."

#### ANEMIA.

In this connection we would call attention to the fact that pernicious anemia is usually benefited if stimulating doses of penetrating rays are administered at frequent intervals to the spleen and the long bones. The earlier the treatment is instituted the better the results.

#### GOITRE

All the ductless glands are very radio-sensitive. Rarely does the X-ray fail to cure exophthalmic goitre in young women. Pfender says, "The time is approaching when every case of exophthalmic goitre will be thoroughly rayed before surgical procedure will be considered."

#### THYMUS.

Enlarged thymus glands shrink like a sponge exposed to Arizona sunshine. Skinner says, "This is one of the most brilliant fields of roentgen therapy. In one or two treatments the condition is relieved." Let us keep in mind that asthmas due to an enlarged thymus are promptly cured.

**HIGH BLOOD PRESSURE.**

If depressing thyroid activity by raying is rational and successful treatment for hyperthyroidism, why not apply this remedy to the suprarenals in the early stages of high blood pressure? Zimmer and Cottenot report permanent lowering of high blood pressure by roentgenizing the adrenals.

**FIBROIDS.**

Fibromas and myomas of the uterus are usually markedly benefited by the physiological menopause, consequently we might expect the depression of the ovarian function by roentgenization would favorably influence these growths. Roentgenologists, both at home and abroad, are unanimous in their report of favorable results in their treatment of these benign tumors of the uterus. Grier says, "The value of the X-ray in the treatment of uterine fibroids rests chiefly upon their effect upon the ovaries. After X-ray treatment large fibroids often reduce to a very small size or disappear altogether. The reduction of tissue is too great to be due to direct action of the rays alone, and is mostly indirect, from the action of the ovaries upon the uterine circulation. Menorrhagia is perfectly controllable by this treatment."

**SKIN.**

The value of roentgen therapy in diseases of the skin is attested by the fact that all skin hospitals and leading skin specialists use this form of treatment. It has been found that the human skin absorbs 50% of the rays from a gas tube. Usually only chronic skin diseases should be treated. The following skin diseases are amenable to roentgen rays: subacute and chronic eczema, pruritis, psoriasis, prurigo, ringworm, lupus vulgaris and erythematosus, scar keloids, lipoma, warts and rodent ulcer; also many less common skin diseases. As both the skin and small blood vessels are highly susceptible to the rays we should expect that nevi or birthmarks would be destroyed, which is the case. The stimulation of the growth of connective tissue is a factor in the destruction of nevi.

**MALIGNANCY.**

All malignant tumors should be removed surgically and then followed by a course of thorough raying extending over several months. This procedure is universal in our large clinical centers. Small superficial epitheliomata and carcinomata, when treated early, are usually cured without excision. The axillary and substernal lymph glands may, at the time of the removal of a carcinomatous breast, show no enlargement. However after a time they do enlarge and we have recurrence of the disease if the glands have not had a thorough course of raying following the operation. Cases of inoperable carcinoma are relieved and made comfortable by treatment; the pain promptly disappears, the discharge is lessened, life is prolonged, the tumor shrinks and some cases become operable. In speaking of carcinoma Dr. Robert Knox, of London, says, "In all cases where time permits X-ray



exposures should be given. There should be no delay in performing the operation, but usually a few days elapse between diagnosis and operation and during these one dose at least may be administered." Unitedly, surgery and roentgenology are achieving quite brilliant results in malignancy, while the results of either independent of the other are disappointing. It is true here, as in all specialities of medicine, that, united we stand, divided we fall.

The 1914 Noble Prize for Physics, was awarded to Max Von Laue, of Frankfort-on-the-Main, for demonstrating that roentgen rays are the same as light rays, except that their wave length is much shorter. Their wave length is only one ten-thousandth that of light and, consequently, they are invisible. Since these rays are no longer an unknown quantity, Roentgen Ray is a more accurate term than X-ray. Marx found the velocity of roentgen rays identical with that of light rays. However, they exhibit many differences. They are not reflected by media in general, they do not heat the tissues, and they have extraordinary powers of penetration through substances opaque to light. Gamma rays of radium are analogous and probably identical with roentgen rays since they are ether vibrations; while the alpha and beta rays of radium are, respectively, positively and negatively charged particles of matter. Eve has shown that beta rays are transformed to gamma or roentgen rays when a screen is interposed. Chadwick has shown that the same is true of alpha rays. Gray demonstrated the converse, that the stopping of gamma rays produced beta rays. The calcium and iron of our tissues produce these changes in the rays.

The rays have a selective effect, some tissues being highly susceptible and others not being at all influenced by exposure. Bergonie and Tribondeau stated that immature cells and cells in active state of division are more sensitive to roentgen rays than are cells which have already acquired their fixed adult morphological or physiological characteristics. Cells with large nuclei are also very radio-sensitive. With the exception of bone and cartilage, which are not affected by raying, Shultz demonstrated that tissue sensibility depended on its specific gravity. The heavier the organ the more susceptible to roentgen rays. As ovaries have, when we except bone and cartilage, the highest specific gravity of any body tissue, they are most susceptible to rays. Skin, thyroid gland, connective tissue, mucous membrane, spleen and liver follow in the order named. The intima of capillaries is very susceptible and easily destroyed.

Bacteria are not injured by exposure to roentgen rays of the duration of ordinary treatment. Murphy and Ellis found that mice inoculated with bovine tubercle bacilli became less resistant to the infection following X-ray treatment. This is probably due to the depressing effect of the rays upon all of the white blood corpuscles. Only glandular, bone, and skin tuberculosis are benefited and usually cured by roentgen therapy. Tuberculous substernal lymph glands are no exception to the rule, that such are cured by X-ray treatment. The lungs of patients actively tuberculous should



not be treated. In arrested cases where the lymphocytes have completed their work, it may be that stimulating doses may increase connective tissue growth. Such beneficial results as have been reported from treatments with one m. a. target skin distance of fifteen inches, with a gas tube, must be due to the counter irritant effect of the rays upon the skin.

Roentgen rays, like light rays, in small doses are stimulating, in larger doses depressing and in still larger doses destructive to tissue. The sun burned back which followed the first visit of the season to the old swimming hole resembles a slight X-ray burn or dermititis. The great advance in roentgen therapy during the past three years has been due to the Coolidge tube, the use of filtered rays and improved transformers. We are now able to give thirty times the former dose, and regulate accurately the penetration, quality, and quantity of the rays.

At the annual meeting of the American Roentgen Ray Society, in Chicago, last September, Prof. Coolidge showed a small metal X-ray tube. He has succeeded in hermetically sealing the pores of the metal and when he succeeds in sealing the window so that the vacuum will be maintained indefinitely, this tube will, to a great extent, take the place of radium as it can be introduced into the cavities of the body, and new luster will be added to the name of the quiet little worker of Schenectady, N. Y., Prof. W. D. Coolidge.

In concluding I desire to quote the following paragraphs from a recent paper of Dr. Wm. J. Mayo.

Beatson of Glasgow found that in some hopeless cancers of the breast, removal of the ovaries produced an extraordinary effect on the cancer, several patients of this description being apparently cured. Beatson is a most distinguished as well as conservative surgeon, and his results, which have been duplicated by others, will show the remarkable effect of stopping the internal secretion of the ovaries.

One cannot escape from the conviction that in myomatous disease, the use of radio active substances is destructive—non operative, but not conservative. In the great majority, if not all, of the cases in which the myomas completely disappear under their use, the patient loses the function of the ovaries, tubes and uterus, although the nonfunctionating remnants were left in situ."

Colwell and Russ show that irradiation acts markedly to obliterate the capillaries, perhaps because they have only the inner endothelial coat. It does not act to a great extent on the larger three-coated blood vessels. This peculiarity accounts for the splendid results obtained by irradiation in vascular and lymph tumors, and also for the extraordinary reduction of the enlarged leukemic spleen. The splenic vessels have only the inner coat. Colwell and Russ, however, show that islands of cancerous tissue cling to the larger vessels where irradiation will seldom destroy them.

The latter fact serves to emphasize the statement made in this paper that all malignant tumors should be removed surgically and then a thorough course of X-ray treatment instituted, the course extending over at least a year.

## EXTENSION OF TUBERCULOSIS OF THE LUNGS AS SHOWN BY THE X-RAY.

BY

COLONEL GEORGE E. BUSHNELL, Medical Corps, U. S. Army, Fort Bayard, N. M.

(Read before the 3rd Annual Meeting of the Medical and Surgical Association of  
the Southwest, El Paso, Texas, Dec. 8th, 1916.)

As Cohn says, morbid changes in the lungs are shown by shadows due to two substances: first, blood; second, fully organized connective tissue. Blood imprints a shadow on the negative only when present in abundance. The congestion of lobar pneumonia is typical. Broncho-pneumonia of tuberculous origin may also cast shadows, but only when the process is acute, the congestion great. Frequently the tuberculous process runs so chronic a course that the inflammatory reaction is insufficient to congest the lung enough to produce a shadow. The shadow of congestion is not sharply outlined, it melts away at its borders.

Connective tissue in the parenchyma of the lung away from the hilus is not normally present in sufficient quantity to retard appreciably the passage of the X-rays except as it occurs in connection with and as a part of the various tubes, bronchi, blood vessels and lymphatics. As a result of proliferative inflammation, connective tissue occurs as a fibrous thickening of these tubes, particularly the bronchi and the lymph vessels, which cast a shadow deeper than normal; the older the process and the better organized the tissue, the denser the shadow and the sharper its outline. Tubercle caseations as such, cast no shadows distinguishable from the other tissues of the parenchyma. Cohn (1) found that cubes, 1 cubic cm. in size, of caseous tubercles when embedded in a healthy lung were indistinguishable by the X-ray. But if the caseations become calcified or are even impregnated abundantly with lime salts they become opaque to the X-ray. We should then add lime salts as a third substance, the presence of which shows a morbid change. Indeed it may well be inquired whether the sharpness of the shadows from old, fully organized connective tissue may not be due largely to its impregnation with lime salts, for we know how readily deposition of these salts occurs in the fibrosis of chronic proliferations, in which case our three substances are again reduced to two. We have then one substance, blood, which characterizes acute parenchymatous inflammation and one (or two) other substances which characterize chronic inflammation or the result of chronic inflammation, namely, indurated fibrous tissue.

Of course fuzziness of outline, mossy shadows, marbling, may conceivably be due in whole or in part to the approximate superposition of

various shadows in different planes, the remoteness of a part of which leads to indistinctness of outlines, though the individual opacities may be sharp. But in general, and especially if we are dealing with the shadows of tubes, we may say that fuzziness of outline means acute vascular congestion, an active process. On the other hand when the shadows of the tubes are sharp we have a process which if active at all is at least not characterized by great acuity: is not congestive. Stuertzt speaks of what he calls dry tuberculosis of the lung tissue, which inclines to abundant formation of connective tissue, to dry caseations and cicatrizations or to complete transformation into fibrous tissue, as characterized by sharply outlined granular spots and by more or less sharply marked bands and streaks. (2) We would call especial attention to the persistence of the sharply outlined dots and lines when no tuberculous activity longer exists. We can not emphasize too strongly the point which is so frequently overlooked, that the sharply outlined thickenings of the bronchi and other tubes may be evidence of an old inflammation now entirely obsolete, may be simply records of the ancient history of the pulmonary tuberculosis.

We do not see tubercles in the X-ray negative. What we see is either sharply outlined calcifications and fibroses, or fuzzy congestions, or a combination of the two conditions. Cohn (1) states that he has seen cases in which X-ray in general gave the same findings in both lungs while autopsy proved one lung severely, the other slightly, diseased. Such cases illustrate well the limitations of X-ray diagnosis. What Cohn saw in the X-ray negative was probably the thickened framework of old inflammation in the two lungs, in one accompanied by much parenchymatous disease of recent origin, in the other accompanied by little, the said parenchymatous disease being invisible to the X-ray because neither sufficiently congested nor sufficiently organized to cast shadows.

We do not then see tubercle as such any more than we see tubercle bacilli in the X-ray; we see only the results of tuberculous inflammation. It is necessary to insist upon this point because failure to appreciate it has been the cause of much faulty diagnosis. What can be more lamentable in every way than a diagnosis of active pulmonary tuberculosis based on the existence of sharp lines and dots, which are really signs of an old process, the diagnosis being supported it may be by a positive tuberculin reaction, which of course is not by any means necessarily an evidence of activity of tuberculous disease. True, a lung which shows only sharp lines and dots may nevertheless be the seat of a recrudescant tuberculous process, but the fact must be proved by other evidence than that afforded by radiological examination.

Friedrich Muller says: "The exaggerated expectations once had for the X-ray illumination have not been fulfilled. It is the experience that fresh and not extensive inflammatory processes, as some broncho-pneumonias, or recent tuberculous infiltrations, escape the X-ray negative.



It was pointed out in a discussion on the X-ray at Berlin that we can not recognize fresh tubercles in the lungs, with the same disappointment that Laennec and Skoda felt when they recognized the fact that even an extensive miliary tuberculosis presented no perceptible signs to auscultation and percussion." (*Zeitschrift f. Arztliche Fortbildung*, 9, 1912, p. 417.)

If a certain number of inert solid particles are present in the streaming fluids of the body they will be disseminated in a way which will vary according to their number, place of entry, etc., but their distribution will depend upon purely physical laws. If we suppose tubercle bacilli to circulate in a body devoid of resistance, the distribution of primary tubercles will likewise depend upon the laws which govern the flow of the body fluids—tubercles will form wherever the conditions permit the lodgment of the bacilli. Tuberculosis of this kind is never met with. It is approximated only in animal experimentation, and, in the human subject, in miliary tuberculosis and in the final dissemination of tubercle which immediately precedes death. In the great majority of cases of human tuberculosis, tubercles do not develop everywhere that tubercle bacilli are present, on the contrary, the location of tubercles is determined by the greater or less resistance of the organism. In some cases the resistance is slight, the tubercle bacilli are able to develop in many locations, in others the resistance is high and tubercle bacilli can form tubercles, that is, can multiply, only under conditions that are most favorable for them.

Nothing is more confused than the picture presented by old and advanced tuberculosis of the lungs. The laws which have governed the deposition of tubercle are no longer to be deciphered, the original course of the disease can only be conjectured, so much is it obscured by the late growth and coalescence of foci. I have long felt that to understand clinical tuberculosis we must approach it from the standpoint of immunity, i. e., we must study the resistance of the organism and endeavor to learn how such resistance affects the growth and dissemination of the foci. I have already written on this subject from the standpoint of the clinician with only incidental reference to the radiological side. It is proposed in this paper to consider what corroborative evidence can be adduced from X-ray negatives in support of the theory already advanced. The theory is briefly this: While in the thoroughly immune individual in perfect health tubercle bacilli are shut up in the bronchial glands, are restrained from growth at certain times as in intercurrent disease, exhaustion from overwork or excesses of any kind, bad hygiene, etc., individuals of even high resistance pass through periods of depression during which the micro-organisms are able for a time at least to develop their activities. The resistance still remaining high, though not absolute, the tubercle bacilli will develop only under conditions most favorable for them. These conditions are: 1. The proximity of large collections of tubercle bacilli. Other things being equal extension will take place first from the largest focus in the body. 2. Extension will



occur in locations in which the tubercle bacilli are shielded from contact as far as may be with the antibodies which circulate in the blood—they will progress in relatively nonvascular regions. 3. They will seek locations in which they can multiply without being disturbed by motion, not only because rest is essential for a colony growing by supposition under the most difficult conditions, but because motion means function, and function is accompanied by vascularity.

Applying these laws to the extension of tuberculosis within the relatively immune lung we should find that tuberculosis begins in the hilus glands, that it spreads through the relatively nonvascular connective tissue of the framework of the lungs, avoiding the vascular parenchyma and being restricted to the perivascular and peribronchial structures. And even here in conditions of the highest resistance short of absolute immunity they will be able to propagate themselves only along the bronchi and blood vessels of parts of the lung of least motion—they will be restricted to the paravertebral portions of the lung and especially to the paravertebral region of the upper lobes. And it is this precisely that the X-ray shows. The resistance which absolutely prevents extension from the bronchial glands is apparently not common. In the majority of individuals who have had no clinical tuberculosis the X-ray shows extensions of tuberculosis as sharp lines with usually a few small dots, the process being confined to the deep lung. In many there is evidence of extension to the deep portions of the lower lobes near the spine, the existence of tuberculosis being probably shown by the presence of sharply outlined dots. From the rarity of lower lobe tuberculosis in the adult and the frequency with which it is met with in childhood it may be assumed that this process runs its course as a rule in early life.

In the adult, in whom the apices are better developed and the relative immobility of the upper lobes is greater than in the child, extensions occur chiefly into the paravertebral portions of the upper lobes. There are many cases in which clinical tuberculosis has never been demonstrated in which this process extends well up into the upper lobe, but does not reach the superficies of the lung. This fact sufficiently demonstrates the course of the disease. It must have been propagated from below upward, not as is often thought from above downward. For many the propagation of the tuberculous process in a centrifugal direction, that is, opposed to the normal lymph flow, presents difficulties. Here we take the position of Rieder, the well-known authority on the X-ray, who says: "Tubercle bacilli, like other germs, manifestly produce inflammatory thickening of lymph vessels. The consequence is a stenosis, perhaps finally a closure of these vessels, so that distally a stagnation of lymph and an extension of the infection can take place against the stream." (3) For further discussion of this phase of the subject lack of time compels a reference to the paper already referred to. In other cases the disease process reaches the superficies of the upper lobe, generally below rather than above the clavicle, and is shown to the

eye by calcified tubercles one or many, by pleural shadows, perhaps even by an obsolete cavity. In other cases with less immunity the process is not so closely confined to the paravertebral region, it extends not only upward but upward and outward. The loss of resistance permitting the tubercle bacilli to multiply in the more mobile portions of the lung, they are no longer restricted to a single or few channels, the lines of extension are numerous and radiate fanshaped from the hilus in the general direction of the shoulder joint. In the paravertebral extension upwards the tuberculous nature of the process is manifested by the presence of dots which represent tuberculous glands or parenchymatous foci. In cases of the highest resistance these dots or spots are least developed and the tuberculous nature of the affection is shown purely by the limitation of the lines to the paravertebral region. These are cases of tuberculous peribronchial lymphangitis in the strict sense. What is generally called tuberculous peribronchitis is really tuberculous broncho-pneumonia limited to the vicinity of the bronchi and blood vessels. Here the parenchyma is invaded, but only in locations of least motion, i. e., immediately around the vessels and air tubes, and if the process is active we have the mossy appearance described by authors, as it were a tree the branches of which have a soft irregular outline. When immunity fails still more the infection progresses to the involvement of the parenchyma on a wider scale and there is seen the confused picture of the pulmonary tuberculosis in the slightly resistant lung.

We have then the following subdivisions of tuberculosis of the deep lung:

1. Tuberculosis limited to the bronchial glands.
2. Tuberculosis capable of extension only in parts of least motion—paravertebrally upwards. In the highest immunity the process is strictly a tuberculous lymphangitis of the bronchi.
3. Tuberculosis extending upwards and outwards as well as directly upwards. The ability of the tubercle bacilli to maintain themselves in parts of greater mobility speaks for a lesser immunity, hence generally invasion of the parenchyma—a peribronchial broncho-pneumonia rather than a peribronchial lymphangitis—but cases are met with in which the disease is shown by the X-ray to be practically limited to the peribronchial lymphatics.
4. Tuberculosis extending peribronchially in all directions. Here, too, there may be abortive cases in which the disease is limited to the lymphatics. As a rule, however, the process quickly becomes a tuberculous broncho-pneumonia.

Lapses of immunity may lead at any time to pneumonic processes and confuse the picture. Typical tuberculosis of the upper lobe is a broncho-pneumonia developing upon a peribronchial lymphangitis of a paravertebral bronchus, the conditions in the upper part of the upper lobe being

especially favorable for invasion of the parenchyma because of the relative immobility of the part in the adult.

Among 984 chest plates of different patients at Fort Bayard, 394 showed paravertebral tuberculosis as a marked feature. Only 2 cases of strictly apical tuberculosis were found.

Eighty-two cases showed paravertebral tuberculosis alone (thickened lines with studding extending towards or to the apices).

Thirty-nine of the latter had not reached the apex.

Forty-five of the 82 cases of paravertebral tuberculosis gave no definite physical signs.

All of the 82 cases had at some time shown symptoms of tuberculosis, such as cough, expectoration, pleurisy pains, bleeding, loss of weight, fever, night sweats, malaise, etc.

All of the 82, with two exceptions, had at some time or other had a positive sputum.

Of 62 cases in incipient stage admitted since January 1, 1915, 37 had no physical signs; all had or had had symptoms; all except one had or had had a positive sputum; plates of all except two showed paravertebral tuberculosis above hiluses; of these two one had a basal pleurisy, the other a few scattered foci, some of which were in the outer part of the lung.

These figures give evidence conclusively of the importance of tuberculosis of the deep lung in the early history of pulmonary tuberculosis. The so-called incipient cases are not truly incipient, they are as a rule detected when the deep tuberculosis has begun to invade the superficial lung, when upon tuberculous lymphangitis or peribronchial broncho-pneumonia there has been engrafted a larger focus of broncho-pneumonia involving the cortical lung, the so-called primary lesion. Truly incipient tubercle gives no symptoms. Loss of weight, malaise, fever, cough and expectoration, hemoptysis, night sweats, are not symptoms of incipient but of advanced tuberculosis. Their development marks in a general way the progression of the disease from the benign lymphangitic stage to that of tuberculous broncho-pneumonia, whether this disease manifests itself in the form of numerous minute foci immediately surrounding the larger bronchi or of single or few larger foci in the superficial lung. Physical signs of the deep tuberculosis are absent or indefinite. The diagnosis depends almost entirely upon radiological examination. The X-ray also determines largely the prognosis which depends to a considerable degree upon the number, character, extent and distribution of the pathological shadows of the deep lung, not as evidence necessarily of present disease but as showing on the one hand to what degree of immunity the patient's organism has attained in the past, and on the other what and how serious lapses of immunity there have been, how widely the deep lung has been invaded by

the disease. From these data, remembering that for the most part they give the past history of the tuberculosis, we can determine what the possibilities of the future are. It should be borne in mind that in this discussion we are considering especially the tuberculosis of the relatively immune subject. The diagnosis and prognosis in the case of the patient with feeble resistance is only too easy and his X-ray plate is a palimpsest hard to interpret.

1. Zeitschr. f. tuberkulose, XVII, 3 1911, p. 217.
2. Muench. Med. Wochenschr. 26, July 1, 1913.
3. Deutsch. Archiv. f. Klin. Med. 95, 1908, p. 62.



## RADIUM: ITS PROPERTIES, ACTION AND LOCAL APPLICATION AS A THERAPEUTIC AGENT.

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BY

REX DUNCAN, M. D., Los Angeles, California

Attending Radium Therapist at The Los Angeles County Hospital. Attending  
Clinician in The Radium Clinic of The Graves Memorial  
Dispensary of The Los Angeles Medical Depart-  
ment of The University of California

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In order that we may have a more comprehensive understanding of the action of radium and its local application as a therapeutic agent, it may not be amiss to consider briefly certain physical and chemical properties of this substance.

Radio-activity was discovered accidentally by H. Becquerel in 1896 as a property of uranium and uranium salts. He demonstrated that this metal had the property of spontaneously sending out energy in the form of rays capable of acting on photographic plates after passing through opaque bodies. He afterward found that this invisible radiation was capable of discharging electrified bodies, e. g. the electroscope; and Rutherford showed this to be due to the ionization of gases through which the rays pass.

In 1898 Mme. Curie and M. Schmidt discovered, working independently of each other, similar rays in thorium. Taking this as a subject of a thesis for her Master's degree, Mme. Curie continued her investigations. In 1900, after long and skillfully conducted researches, Prof. P. and Mme. Curie were rewarded by the discovery of two new radio-active substances. One of these, of much lower activity, was called polonium to commemorate Mme. Curie's native land; the other was extremely active and was called radium. In the same year Dieberne isolated another substance, which he called actinium, but owing to its difficulty of extraction and short life is unable to be utilized at the present time. In 1904 Ramsey and Hahn discovered radio-thorium or mesothorium, and in 1906 Boltwood discovered ionium. These are the principal radio-active substances known at present.

Radium has been the substance used most in therapeutics, owing to its relatively possible isolation in the state of pure salts and its extreme radio-activity, which is 2,000,000 times greater than that of uranium, taken as a unit of measurement.

### CHEMICAL AND PHYSICAL PROPERTIES OF RADIUM.

Radium (symbol Ra.) is a metal, atomic weight 226.5, belonging to the same group in the periodic table as calcium, barium, and strontium, which it resembles in its chemical reactions. It combines powerfully with the

halogens and acid radicals forming stable compounds which chemically resemble the salts of alkaline earths, but differing materially in that the radium salts possess the property of radio-activity. All its compounds are radio-active in proportion to the amount of radium element they contain.

Radium has been produced in its pure metallic state, but is of scientific interest only, owing to its rapid disintegration. The most common salts are the chlorids, bromids, carbonates and sulphates. The chlorids and bromids are soluble in water and the carbonates and sulphates are insoluble. All of the radium salts are independently luminous. They cause fluorescence in certain substances, e. g., diamond, willimite ore, barium-platinocyanide.

Heat is liberated spontaneously and continuously, one gram liberating 134 calories per hour. Some idea of the enormous amount of energy stored in radium may be gained when we consider that it has been calculated that if the energy could be employed in the same manner as coal, a quantity the size of a pin-head would be sufficient to light London for one year.

Radium renders air a good conductor of electricity by "ionizing" it, therefore it causes the discharge of a charged electroscope. The velocity of this discharge can be easily calculated and is in exact relation to the power of activity possessed by the salt. This is utilized as a very accurate means of comparison and measurement.

Radium undergoes disintegration in a constant, continuous and regular manner; its one-half life period being estimated at 1780 years. Helium, a gas, atomic weight 4; and emanation, a gas, atomic weight 222.5, are the first products of disintegration of radium. Emanation is the most important product of this disintegration, for from its decomposition results the formation of the active products known as "Radium A", "Radium B", "Radium C", "Radium D", "Radium E" and "Radium F". These active products also decompose, resulting in the radiations called alpha, beta and gamma rays.

For local application we may utilize either the emanation alone or the radium salts. The emanation may, with proper apparatus, be collected from radium salts in solution and retained in sealed glass containers. Its radio-activity rapidly diminishes, however, the one-half life period being only 3.85 days. The salts, when properly inclosed, as in hermetically sealed tubes, retain their radio-activity with the life of the salt.

#### ALPHA, BETA AND GAMMA RAYS.

The alpha rays are particles of matter, only one-fourth the size of the hydrogen atom, and are animated by a velocity of 1-10 to 1-20 of that of light. They are spontaneously charged with positive electricity and are slightly deflected by a magnet. They are absorbed readily, and of low penetration.

The beta rays are electrons, connecting links between matter and ether, spontaneously charged with negative electricity and deflected by a magnet. They form a heterogeneous group differing in their velocity and, consequently, their powers of penetration and are for practical purposes, arbitrarily divided into soft, medium, and hard rays. They are similar to cathode rays of the Crookes tube, but about 500 times more penetrating, having a velocity akin to light. By reason of their tenuity and velocity they have great powers of penetration and easily traverse substances. Sir William Ramsay stated that minute quantities of beta rays will be found after radiation through 5mm of lead. Besides the primary rays we have secondary beta rays, first described by M. Sagnac, which result from the action of gamma rays on encountering matter.

Gamma rays possess nothing of a material nature. They have been described as pulsations of ether of extremely short wave lengths, having a velocity presumably equal to that of light. They are not deflected by a magnet. They follow their own laws, and originate in a manner peculiar to themselves. Therefore, if there be any analogy between them and the phenomena due to the vibrations of ether, as the X-ray for example, there is no identity with them. This explains the absolutely, distinctive and peculiar character of the gamma rays. Their penetration is extreme, passing through as much as 10cm. of lead, and they are practically only annihilated by space.

#### APPLICATORS, SCREENS AND FILTERS.

For local application radium is usually supplied in hermetically sealed glass tubes containing the desired amount of the salt or in the form of flat applicators. The flat applicator may be round, oblong, oval or square, and consists of a metal back over one surface of which a certain quantity of the salt has been equally distributed and is held in place by a special varnish or other substance. The tubes have a much wider range of usage and where a sufficient quantity of radium is available they are to be preferred.

The effect of the rays upon the tissues depends to a considerable extent upon the quantity and quality of the rays employed. It may be desirable to diminish the total amount of radiation or to change the quality so as to alter the respective proportions of the alpha, beta and gamma rays. This may be accomplished by interposing between the applicator and the tissue various metals or other substances which are called screens or filters. Metals, (lead, brass, aluminum, silver, gold, platinum) screens, covered with rubber tissue to absorb the secondary rays, are most commonly employed. The filtration of the different rays by the screen is practically, though not exactly, in proportion to the density and thickness of the metal employed. The alpha rays are completely eliminated by a thin sheet of metal or glass and, in fact, rarely penetrate the walls of the apparatus or container. The heterogeneous character of the beta rays renders their



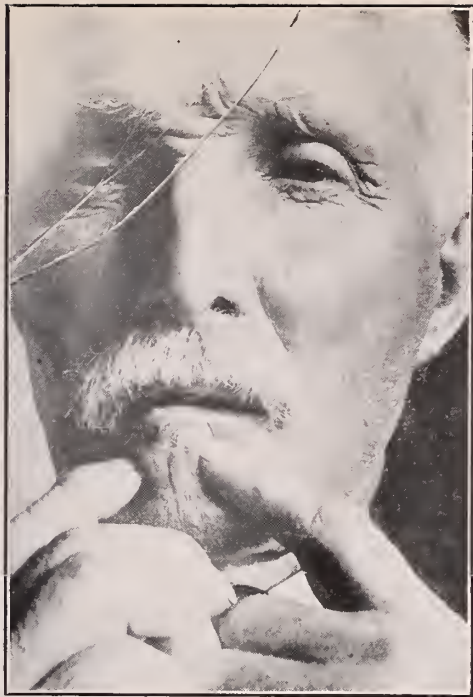


Fig. No. 2, Case No. 89. Epithelioma of lower lip.

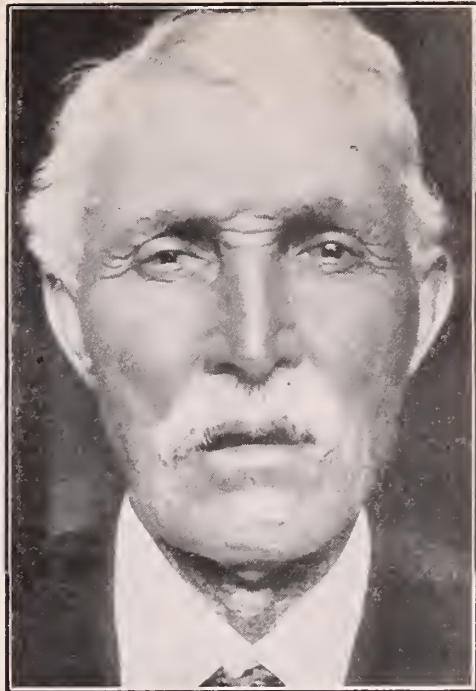


Fig. No. 3, Case No. 89. Six weeks following Radium treatment, apparent clinical cure. Note excellent cosmetic result.

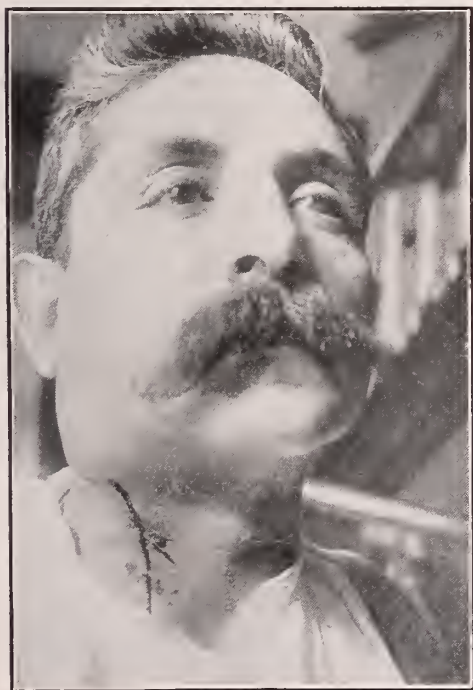


Fig. No. 4, Case No. 53. Lymphadenoma of the cervical glands. Recurrence two weeks following radical operation.

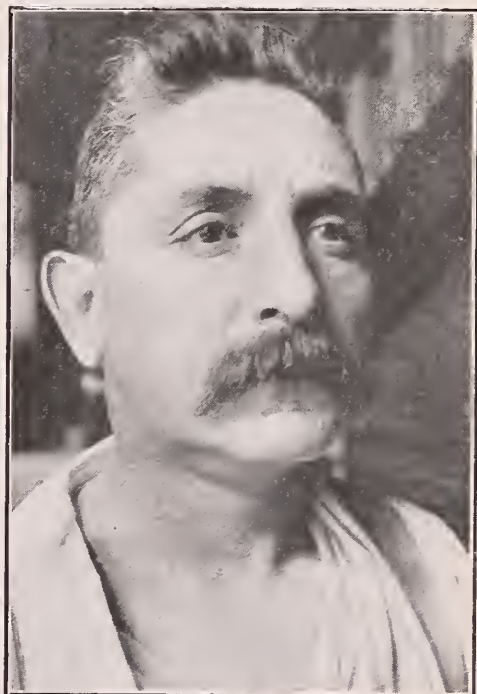


Fig. No. 5, Case No. 53. Three weeks following treatment with Radium.





filtration more complex, for while 0.5mm of lead will absorb the soft rays, they are not all eliminated by 5mm. of lead. The gamma rays cannot be eliminated and are always present when beta rays are employed.

It is thus evident that by the use of a series of metallic screens of different thickness it is possible to modify "ad infinitum" the value of the radiation, quantitatively and qualitatively. The distance intervening between the applicator and the tissue also acts as an important factor in modifying the therapeutic effect of the rays.

#### DOSE AND TECHNIQUE OF APPLICATION.

Success with any therapeutic agent necessarily depends upon a thorough understanding of the pathology of the condition to be treated and of the proper application of that agent. While a thorough knowledge of certain fundamentals is essential, there can be no fixed rules or dosage for the application of radium. As in other branches of medicine and surgery, the skill and judgment of the physician gained by study and experience will largely determine the results.

An accurate knowledge of the quantity of radium element employed is, of course, essential. In Europe, radium bromide is used as a standard of measurement; in this country, the radium element. Since the bromide contains only 53% of the element, we must make the necessary deduction when comparing quantities. Unfortunately, much of the radium salts purchased in Europe have, when submitted to the U. S. Bureau of Standards for measurement, been found to contain considerably less of the element than supposed. This has not only resulted in financial loss to the purchasers, but has been the cause of many disappointments in radium therapy.

I am employing in my work 100 milligrams of the element in the form of the sulphate. This is so divided that several cases may be treated at one time, or the entire quantity may be employed on the same patient. Rarely, however, is a single dose of over 100 milligrams required or less than 25 to 50 milligrams sufficient.

The therapeutic effect of a given quantity will be modified by the length of application, intervals between applications, screening, cross-fire, distance, etc. The same results cannot be obtained by the use of small quantities for a longer interval as would result from the action of sufficient dosage properly applied. It is possible by proper screening and suitable quantities to treat successfully deep seated conditions without injury to the intervening tissues. The small size of the applicators makes their introduction into cavities and tumor substances possible, where they may remain without discomfort.

## HISTOLOGICAL ACTION OF THE RAYS.

The effect produced by the rays of radium upon the tissues will depend upon the histo-pathological characteristics of the tissue treated and the quantity and quality of the rays employed. Tissues differ in their susceptibility to the rays. Certain pathological tissues, namely, those that constitute keloid, angiomata and round cell sarcoma, are very susceptible and react in a way that may be appropriately termed specific. The reaction that follows radiation is essential for curative effect, but is not necessarily destructive. Disintegration and absorption of morbid tissues may occur without necrotic or inflammatory destruction and does not in any way resemble that produced by cautery, caustics, or similar agents. This reaction occurs after a latent period depending upon the dose employed and susceptibility of the tissues treated. Microscopical changes occur in a few hours or days, while two or three weeks may intervene before there are visible changes.

The histological changes that occur in malignant tissues vary considerably with the type of cell comprising the tumors.

The conclusions drawn by Teitschlaender,<sup>1</sup> of Vienna, after repeated pathological examinations of malignant tissue exposed to radium applications, are as follows: "The chief action seems to be the inhibition of karyokinesis and activation of leucocytes and destructive changes, allowing the abnormal tissues to degenerate."

In sarcoma the retrogression takes place according to the following law:

1. The size of the body and the nuclei of the large cells decrease.
2. As they shrink the neoplastic elements elongate, the shape of the nucleus becomes regular, and they eventually assume the form of large embryonic connective-tissue cells, forming into a cell mass similar to that of a true fibroma. Thus we may emphasize the fact that sarcoma is transformed by radium into tissue analogous to that of a fibroma with myxomatous changes.

As regards epitheliomata and carcinomata under the influence of the radium rays, we find that:

1. The cells gradually diminish in size and staining properties.
2. This atrophy corresponds, not to the metamorphosis of those definite formed elements, but to their destruction, as shown by keratinization or absorption.

The epitheliomatous cells disappear, either by means of progressive absorption of protoplasm and nuclei through the leucocytic infiltration or by a sort of granular degeneration.

The other processes associated with the development of every epithelial tumor are arrested, while vascular connective tissue is reorganized according to the method just described.

The endothelium of blood vessels is extremely sensitive to the rays and with moderate doses swells enormously and may obliterate the vessel, while large doses cause its destruction.

The effect on inflammation is to remove or diminish it, probably by stimulating the tissue to resist the action of bacteria and partially by the slightly germicidal action of the beta rays.

Dr. Danlos, physician to St. Luke's Hospital, Paris, in 1901 was the first to use radium, which was furnished him by Madam Curie. Soon afterward, Dr. Wickham began his work, which resulted in the establishment of the Laboratoire Biologique du Radium, Paris, whence invaluable research and clinical data have come. Dr. Abbe, in 1905, was the first to employ radium in this country, and has since contributed greatly to our knowledge of its application and value. Radium therapy has made great progress both at home and abroad, especially during the past four or five years. Time will not permit of a detailed account of the development of radium therapy.

Notwithstanding considerable opposition, radium has attained a definite place in therapeutics, both abroad and in this country. A very significant and pleasing thing has been its continued and constantly increased use by some of the most capable men throughout the world, and where sufficient quantities have been employed with proper technique in appropriate cases, the results have been most uniformly encouraging. The scope of this paper will not permit of complete case reports and statistics, but I wish to mention briefly some of the pathological conditions in which radium has proven of superior value as a therapeutic agent.

#### BENIGN CONDITIONS.

Papillomata of the skin respond very favorably to radium. Recent cicatrices, or scars, causing disfigurement or loss of function, may be markedly improved. One of my cases, a young lady, in which a large and disfiguring scar over the upper arm was completely replaced with soft, smooth and pliable fibrous tissue, which did not contract in the usual way, thereby resulting in a greatly improved appearance. Keloid is readily cured with radium and responds in a way that may be appropriately termed specific.

Flat, superficial naevi, capillary naeva, and port wine stains, especially if large, show very satisfactory improvement and many cures are effected where radium is employed with proper technique, though infinite patience and care are necessary. Cavertous naevi respond most favorably to radium and excellent cosmetic results are obtained.

Hairy moles, pigmented moles, etc., respond very favorably to the rays and, especially when large, the results are superior to those obtained by any other method of treatment.



Rhinophyma, which appears to be an overgrowth of the sebaceous glands of the nose, is readily influenced and the nose caused to resume almost a normal appearance.

I have had very favorable results in the treatment of several cases of tuberculosis of the skin, acne rosacea, and in one case of chronic seborrhic eczema which had proven resistant to all other treatment. Excellent results are also reported in the treatment of lupus-erythematosus, sycosis, and lichen planus.

Vernal conjunctivitis, (spring catarrh) respond very promptly to radium, and in several cases treated has not recurred.

In tubercular glands, where surgical measures have been declined, or because of possible injury to other structures, radium has caused the swelling to permanently disappear and recurrence in adjacent glands is not frequent. In the treatment of a tubercular parotid, as well as tubercular infection of the cervical glands, I have received most satisfactory results. In conjunction with other appropriate treatment, I have seen tubercular laryngitis very favorably influenced and excellent results are reported.

Angiomata, both deep and superficial, respond most favorably to radium. Lymphangiomata also respond most favorably.

Exophthalmic goiter was first treated by Abbe with marked reduction in the size of the gland and relief of the symptoms. Similar results have since been obtained by numerous observers and my personal experience with three cases has been most pleasing.

I have employed radium with perfect results in the treatment of fecal fistula following appendectomy, in two sinus cases, and in a persistent tubercular sinus following resection of the knee joint. Some work that I am now doing will be reported later in detail.

With the exception, perhaps, of malignant conditions, radium has proven its greatest value in the treatment of uterine myomata. A sufficiently large number of cases have been treated by a number of men, working independently, to establish its value in the treatment of this condition. Menorrhagia and metrorrhagia are promptly relieved and the tumor greatly reduced in size or caused to disappear in over 90% of the cases reported. Radium should be the method of choice in the treatment of uncomplicated cases.

Kelly & Burnam,<sup>2</sup> Abbe,<sup>3</sup> Ranshoff,<sup>4</sup> and others report most excellent results from the treatment of this condition. Menorrhagia and metrorrhagia of obscure etiology are favorably influenced in a large percentage of cases. My personal experience in the treatment of these conditions, as well as uterine myomata, has been most gratifying.

Enlarged and hypertrophied prostates of old men have been favorably influenced. Radium offers a safe and convenient method of treatment, the results of which in no way complicate a future operation should surgery become necessary.

#### MALIGNANT DISEASES.

Clinical results have unquestionably demonstrated the value of radium when properly employed in the treatment of malignant disease; here radium may be used as follows:

*First.* Before operation either to render the condition operable or lessen the possibility of recurrence.

Secondly: Post-operatively, radium should with few exceptions be used as a routine measure in the treatment of malignant conditions. In most instances the treatment should be applied immediately following the operation. Because of the small size of the applicators, they may be applied through a small drainage tube and left for the desired time, when the tube and radium may be removed, permitting of primary healing of the wound.

Thirdly: In the treatment of recurrent and inoperable cases, no other agent or combined treatment has yielded the results obtained by the proper application of sufficient quantities of radium.

Fourthly: There are some malignant conditions, especially superficial epitheliomata and certain types of sarcoma, which can be more favorably influenced by radium alone than by surgery or any other method of treatment.

Superficial epitheliomata, of the squamous cell type, can be cured in practically every case where metastasis or glandular involvement has not occurred. I have treated a large number of these cases, some where very extensive destruction has occurred, with an apparent clinical cure in every case. The cosmetic result is truly remarkable. Epitheliomata of the lip, (figures 2 and 3) when glandular involvement is absent, may be permanently cured in practically all cases, and not infrequently, with appropriate treatment, can the glandular deposits be caused to disappear. In epitheliomata of the floor of the mouth, mucous membrane, tonsils, fauces, palate, larynx, pharynx and esophagus, treatment may be adopted with a good prospect of giving relief and not infrequently does complete absorption occur.

Advanced and inoperable carcinoma of the breast and elsewhere may be temporarily relieved and a surprisingly large number of cures have been reported.

As a palliative in the treatment of inoperable and recurrent carcinoma of the uterus, radium has no equal. Pain is relieved, hemorrhage arrested and the odorous discharge stopped in practically all cases. I have seen prompt and complete absorption of the malignant tissue, and the disap-

pearance of all signs of symptoms in a large number of cases treated. Schmidt,<sup>5</sup> Kelly & Burnam,<sup>6</sup> and others who have treated a large number of these cases report of those under observation for from one to five years over twenty-five per cent of clinical cures.

Young reports very favorably on the use of radium in malignant conditions of the bladder and prostate. Two cases of primary carcinoma of the female urethra that I have treated, are apparently clinically cured. Carcinoma of the bladder may be favorably influenced. The radium may be applied through an operating cystoscope directly into the tumor substance where it may remain for the desired length of time. In one of my cases treated by this method, the tumor has entirely disappeared and there is no evidence of recurrence.

Time will not permit me to discuss as fully as I should like the use of radium in the treatment of sarcoma. As previously mentioned, certain types of round cell sarcoma respond most favorably to radium radiation, and I have seen immense tumors rapidly absorbed with but slight constitutional disturbance. In several cases of sarcoma, both primary and recurrent conditions, I have received very favorable results.

In the treatment of lymphadenoma and lymphosarcoma, better results are frequently obtained by the use of radium than by any other treatment, inasmuch as recurrence is most common following attempted surgical removal. In a case of lymphosarcoma of the cervical glands, in which one week following operation, breaking down of the tissues, immediate relief and apparently a clinical cure was obtained by the use of radium. In another case (Figs. 4 and 5) of lymphadenoma involving the cervical glands, in which there was extensive recurrence two weeks following operation, I not only succeeded in arresting the condition but in causing absorption of the malignant tissue and an apparent clinical cure.

In closing I wish to emphasize the fact that radium has a comparatively limited field as a therapeutic agent; however it is a very valuable agent in properly selected cases. Special training and experience are essential to the proper application of radium and it should only be employed under the direct observation of those properly qualified.

805 I. N. Van Nuys Bldg.

#### BIBLIOGRAPHY.

1. Teitslander Monatschr. f. Geburtsh. u. Gynak. 1913, XXXVIII-296.
2. Kelly & Burnam, Journal of A. M. A. 1914, XXIII-622.
3. Abbe, Robt. Medical Record, Mar. 6, 1915.
4. Ransohoff, J. L. Lancet-Clinic. Vol. CXV No. 6 Febr. 1916.
5. Schmidt, H. Surg. Gyn. & Obst. Vol. XXXIII No. 2 Aug. 1916.
6. Kelly & Burnam, Jour. Am. Med. Assn. Vol. LXI No. 22 p. 1874.



## TYPHUS FEVER.

BY

FRANCIS H. REDEWELL, B. S., M. D., Phoenix, Arizona

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The word typhus is derived from the Greek meaning fog or mist. The term came into vogue at a time when the disease was imperfectly understood, and was used by Hippocrates thus describing the "stupor" state of patients suffering from that particular type of fever. It belongs to an entirely different group of infectious diseases from typhoid, namely, the acute exanthemata which it resembles in the extraordinary ease with which it is transmitted, by its self limited course, by the rare occurrence of relapses, by the peculiar character of the temperature curve, and also because the eruption appears at once instead of in successive patches.

## SYNONYMS.

Some of the one hundred synonyms for typhus fever are: Spotted typhus, exanthematic typhus, typhus contagiosus, febris pestilens, febris petrida, febris petechialis, typhus carcerum, (jail fever), febris castrensis (camp fever), febris nautica (ship fever), hunger typhus, and febris Hungarica (Hungarian fever).

## HISTORY.

Typhus fever is one of the diseases that was probably known to antiquity. Hippocrates, Aetius, Rhazes, and Avicenna give exact description of the disease in their writings. The earliest unmistakable reports were those of Jacobus de Partibus, 1463, but even at this time it was confounded with plague, typhoid, erysipelas, scarlet fever and relapsing fever. The pest of Cyprus 1505-28 which ravaged the whole of Italy was typhus; the morbus Hungaricus of 1552 in the army of Charles the Fifth at the siege of Metz, the plague in Hungary 1566, the plague in Denmark 1613-52, that of Vienna 1757 and '59, and in the German Provinces 1771 and '72—all those epidemics were contagious typhus. Typhus fever has always followed in the wake of armies. It claimed more victims than weapons did in the thirty years war, and was the great scourge of the Napoleonic campaigns and decimated the French army in the terrible retreat from Moscow. Hildebrand's monograph thoroughly covers the typhus epidemics through the whole of Europe in the 18th and 19th centuries. Since 1830 the disease has always been prevalent in Ireland and England. In Ireland alone an eighth part of the population was affected, while in Dublin every third person had the disease. Over 40,000 deaths were recorded. Murchison states that in 1847 there were one million cases in England and



300,000 in Ireland. Osler mentions the fact that during a period of twenty-five years in Ireland, among 1,230 physicians attached to institutions 550 died of this disease. During the Turko-Russian war of 1878 the sanitary conditions in the Russian army must have been appalling. Of 200,000 patients, at least half were afflicted with typhus and half of these succumbed. The surgeons were the worse sufferers, the mortality among them reaching 60%. Typhus fever was confused with other diseases, especially relapsing fever and typhoid. The distinction was clearly drawn between typhus and the former in Ireland about 1826 and the nonidentity was conclusively settled by the discovery of the spirillum of relapsing fever in 1868. Gerhard was the first to set forth clearly in 1837 the pathological differences between typhus and typhoid fevers and the discovery of the typhoid bacillus by Eberth in 1880 definitely established this distinction.

Since 1880 in Germany typhus has been an endemic disease and is fed constantly from neighboring Polish provinces of Russia and at intervals spreads over the entire country. France was also invaded about that time with the disease when there was an epidemic in Lille from which city it spread to the prisons of Paris and other cities.

At the beginning of the present war typhus was a terrible scourge, especially for the first year and a half, before modern sanitation held sway especially in Belgium, Serbia, the Balkans and Russia. Nicolle reported 838 cases in Tunis; three years later after efforts to control the disease in the light of recent researches that had been put into effect, there occurred only 22 cases. In the Balkans and Russia it is estimated that there were over two million cases of typhus with an exceedingly high mortality. Now the modern Russian army, clean shaven, better clothed and with modern sanitation, has reduced the number of typhus cases to a minimum and the Balkans are making headway against the disease with aid of the Red Cross, and Red Crescent; yet numerous cases break out in the prison camps, in the trenches and in remote districts.

In the western hemisphere, the United States has been rich in the visitation of typhus, but how many cases this country has had and for how long a time the disease has been lurking, especially in the larger cities, no one knows and probably no one ever will know. Of course immigrants have brought the disease to our quarantine stations at ports of entry to this country, and the disease was accurately diagnosed at those hospitals, but how about the thousands of the endemic type of typhus scattered all over the states which were not accurately diagnosed until Dr. Nathan E. Brill had published his three papers in 1909 and 1910? These are very interesting reading.

Dr. Brill in those three papers reported 272 cases of a peculiar fever observed by him in the wards of the Mt. Sinai Hospital which type of disease was immediately known to the profession at large as Brill's dis-

ease though not immediately indentified as typhus, and described by him as "an acute infectious disease of unknown origin and unknown pathology, characterized by a short incubation period, a period of continuous fever, accompanied by intense headache, apathy, and prostration, a profuse and extensive erythematous macula papular eruption, all of about two weeks duration, whereupon the fever abruptly ceases either by crisis in a few hours, or by rapid lysis within three days, when all symptoms disappear." Up to that time it was believed that cases of typhus did not occur in this country except at rare intervals. It happened that Drs. Goldberger and Anderson of the Public Health Service who had just returned from Mexico, where they were studying typhus fever, were struck with the similarity of this so called Brill's disease and typhus. They finally saw a case in the Mt. Sinai hospital, drew blood from the patient's arm, injected the blood into a number of monkeys and ten days thereafter one monkey developed a fever which reached its maximum in six days and fell by rapid crisis fourteen days after the rise began. They ran this stain of virus through 76 generations of monkeys and 150 generations of guinea pigs. Finally they proved absolutely that this Brill's disease was typhus by cross immunization thus: It was found that an attack of Brill's disease in the monkey conferred a definite immunity to infection with Mexican typhus, and that an attack of Mexican typhus in the monkey conferred a definite immunity to an attack of Brill's disease.

The wonderful disclosure that Brill's disease was really typhus stimulated the searching of hospital records throughout the country by resident house officers and other interested physicians, and as a result cases have been reported from other hospitals in New York City, Chicago, Milwaukee, Washington, Atlanta, Providence, Boston and points in Virginia and Indiana. For instance, Roger Lee, in study of case records of the Massachusetts General hospital for ten years, 1902-1912, concluded that typhus fever had been present in Boston and vicinity for that time. Of 1,404 cases of continued fever of a greater duration than seven days, 28 corresponded very closely with Brill's description of typhus. This gave a ratio of 1 case of Typhus to 47 of Typhoid. Carrying out this same ratio for the year 1912, there must have been 72 cases in New York City, 22 in Baltimore, 10 in Boston, 22 in Chicago, and 34 in Philadelphia. From this it is evident that typhus, instead of having disappeared from the United States, is present and has been present for years, at least in large cities.

In Mexico, the Central Republics and South America the disease prevails in the severe epidemic form and has been there for centuries. From the time of the siege of Granada, when the Castilian army under Ferdinand was decimated by a fever called "el tavadillo"—"the cloak," the Spanish and Mexican literature has constantly described the ravages of typhus. The present literature calls it "tavadillo." According to Indian hieroglyphics translated by Spanish authors and studied by Libermann, the

disease reigned at the time of the Aztec Empire under the name of "masahuatl" and in the last century terrific epidemics occurred in Mexico City. In 1893 there were 3,000 deaths in the federal district in a population of 350,000. Every year a toll of several hundred lives is exacted by the disease. Olitsky, Denzer and Husk did work in Matehuala, Mexico, population 10,000, where, as well as elsewhere in Mexico, the extent of the epidemic was difficult to determine on account of absence of vital statistics, but from reports of individuals and official papers it was estimated that there were 30,000 cases, or 10% of the population in Mexico City alone, 500 cases in Metehuala during the dry season.

#### ETIOLOGY.

Nicolle, Comte, and Conseil were the first to demonstrate insect transmission of typhus fever. In September, 1909 they reported the successful transmission of typhus from one Bonnett monkey to two others by means of body louse (*Pediculus vestimenti*). In this paper they showed that body lice that had fed on an infected monkey were able to convey typhus fever some time between the first and seventh day thereafter. In February 1910, Anderson and Goldberger reported a successful attempt to transmit the disease from a human patient to a monkey by the bite of body lice. Then they made extensive experiments with the head louse, clipping the heads of typhus patients in the general hospital at Mexico City, crushing these lice and injecting the watery extracts into monkeys and finally concluded in their Government Report of 1912 that the head louse (*Pediculus capitis*) can also transmit the disease by its bite. Numerous investigators attempted by experiments to transmit typhus with other common insects such as the flea, mosquito, etc., with negative results.

For fifty years the medical literature has been replete with articles by experimenters claiming to have discovered the germ of typhus describing cocci, bacilli, spirilla and protozoa; and one very industrious and conscientious observer, Rabinowitsch, wrote seven articles between 1909 and 1914 reporting extensive experiments, but it finally remained for Harry Plotz, in 1914, to be the real discoverer, which work has since been corroborated by such men as Olitsky, Baehr, Denzer, Husk, Anderson and Goldberger. At the suggestion of William H. Welch this typhus organism was called *Bacillus typhi exanthematici* which was the name given the causative factor of this disease by Klebs in 1881 to a hypothetical organism. The name was never actually used previous to Plotz's work because the earlier search for the organism proved futile. The organism, a bacillus, was recovered from the blood of five cases of European epidemic and six cases of mild epidemic in New York City. Since that time Plotz has recovered the bacillus from over 300 human cases.



## MORPHOLOGY OF ORGANISM:

The organism is a small, pelomorphie bacillus, not motile, not encapsulated, and not acid fast. Its length varies from .9 to 1.9 microns, its breadth being from one-fifth to three-fifths its length. Most of the organisms are straight; occasional ones are slightly curved. Coccoid ones also occur. The ends are rounded and slightly pointed, while in smears the organisms are seen end to end, side by side, and at all angles, there being no definite arrangement. Plotz lays his success in discovering the bacillus from the fact that practically all the former observers studied and searched for aerobic organisms while Plotz worked for anerobic bacteria and was successful. The bacillus grows best in acetic fluid containing a little kidney tissue and the mixture covered with liquid petrolatum, it also grows well in 2% glucose agar and glucose broth and glucose serum agar. On the latter in three days a creamy white growth is observed, while cultures in Buchner tubes have no tendency to spread over the surface, but rather to heap up. After five days the growth is more profuse and precipitation more marked. In ordinary culture tubes the growth never rises higher than 2½ cm. from the top. The growths are so faint and pale at first that they can best be seen by transmitted light. It is found by the observers that there are from ten to twenty times the organisms in the blood of sufferers from the epidemic form compared to that of the endemic form, and that relatively large quantities of blood must be drawn from endemic cases to obtain cultures; and that lice must live on their hosts a far longer time in the endemic cases to become infected than in the epidemic cases; also when lice did receive typhus germs in their body it required four to five days of incubation in their bodies to render these lice infective to other hosts. Olitsky, Denzer and Husk showed that infected louse cultures were invariably gram negative but the gram negative bacilli became gram positive on sub-culture. These observers also showed the presence of complement fixation bodies, precipitins, opsonins and agglutinins. They also state that 16% of the cases showed positive agglutinations before the crisis and 95% after the crisis. Another point brought out is that the virulence deteriorates very rapidly in cultures, also that antibodies against this bacillus demonstrated by the late Dale method are found in the serum after the crisis and are not demonstrable at the height of the disease.

## IMMUNITY.

We have not the space here to describe the experiments determining the immunization of animals to the disease as recorded by the various observers but will sum up their reports by saying that whether a human has the endemic or epidemic form it immunizes him against any further attack; also that certain observers who worked with the infected lice and later tried to produce the disease in themselves by bites of the infected body-lice found themselves to be immunized to typhus. As to whether artifi-



cial immunity can be produced to be used in a commercial way, I will quote from one observer what he actually said to the El Paso County Medical Society last February: "I am the only living representative that I know of that has had four doses of the vaccine. I took two of them in New York, one in Chicago and one since I got here. It makes your arms sore, but it does not give anything like the reaction that typhoid inoculation does; only malaise." He died one month later from infection of typhus at Laredo, Texas, while another worker with him had not received the vaccine and contracted typhus, got well. He was Dr. Carlos E. Husk. There have been further works on immunity and a fine article on that subject will come out in a future number of the Journal of Infectious Diseases. At present the only logical type of immunity as we see it is to get some of those endemic typhus infected lice of New York, infect yourself with them and thus contract the endemic form of the disease, which is a mild form and from which the mortality is very low, yet, on recovery, as far as we can learn in the literature, one is immunized for all time to come against another attack of typhus whether endemic or epidemic. As mentioned above a small percentage of doctors and nurses working in hospitals with typhus cases acquire a natural immunity.

#### MORBID ANATOMY.

One of the most peculiar and interesting things about typhus is that there is no specific pathological lesion in any organ of the body. The disease is a bacteremia and the changes are those which result from intense fever. The blood is dark and fluid, the muscles are of a deep red color and often show a granular degeneration, particularly in the heart; the liver is large and soft and may have a dull clay-like lustre; the kidneys are swollen; the moderate enlargement of the spleen and a general hyperplasia of the lymph follicles. Payer's glands are not ulcerated. Bronchial catarrh is usual, and hypostatic congestion of the lungs often present. The skin shows the petechial rash.

#### SYMPTOMS.

One of the striking features of the epidemics of typhus is the direct relation of the location of the disease in the different continents to the severity of the attacks. Olitsky divides the disease into four classes, according to severity:

1. Mildest, the endemic typhus cases in New York (Brill's disease.)
2. Next severe, the epidemic typhus cases in Bulgaria and Russia, 1915-16.
3. Still more severe, the epidemic typhus cases in Mexico.
4. Severest, the epidemic typhus occurring in immigrants from the Balkans. The average mortality of these classes is No. 1,  $1\frac{1}{2}$  to 1%, No. 2, 10%, No. 3, 20%, No. 4, 50%.

### INCUBATION.

Eight to 12 days. As a rule invasion is abrupt with chills or a single rigor and fever. There is headache and pains in back and legs. There is early prostration and the fever attains its height in second or third day. The pulse is full and rapid, but not so frequently dicrotic as typhoid. Vomiting may be distressing, the eyes dull and congested. In severe cases mental symptoms are present, from a mild febrile delirium to an excited, active almost maniacal condition.

### STAGE OF THE ERUPTION.

The eruption first appears on the abdomen and upper chest on the third to fifth day, and in two days more it is all out. Buchanan describes it best as a fine dusky red mottling, as if below the surface of the skin some little distance and seen through the semi-opaque medium; another feature is the rose spots that change to petechia, upon which pressure produces no effect. In children the rash resembles measles, and gives a mottled appearance to the skin called mulberry rash. In mild cases the rash is petechial in character. During the second week the symptoms are more aggravated, expressionless face, flushed cheeks, injected conjunctivae, pin-point pupils. Retention of urine is common, coma vigil is frequent, the patient lying with open eyes but quite unconscious, heart action becomes more enfeebled and death takes place from exhaustion. In favorable cases, at end of second week comes the crisis—often after a deep sleep the patient wakes feeling much better. Convalescence is rapid and relapse rare. The fever maximum is reached on the fifth day with temperature from 105 to 107 degrees and continues with slight morning remissions till the fourteenth day. Just before a fatal ending the fever may rise to 108 or 109 degrees. Mild cases seldom rise above 103 degrees. The typhus siderans is the malignant type, which proves fatal in two to four days.

### COMPLICATIONS.

Broncho-pneumonia is perhaps the most common complication and may result in gangrene of the lung. Also gangrene of the hands, toes and nose may occur. Paralysis is more common. Meningitis is rare. Septic processes, such as parotitis and abscesses in the subcutaneous tissues and in the joints are occasionally met with.

### PROGNOSIS.

As mentioned above, in the mild cases the mortality is very low, while in the severe type it may reach as high as 50%. The disease terminates very favorably in children but becomes very grave in old people.

### DIAGNOSIS.

In epidemics it is easy to diagnose but in sporadic cases it is extremely difficult, for as Osler says: "It is easy to put down on paper elaborate differential distinctions, which are practically useless at the bedside."

The Widal reactions and blood cultures are important aids and especially the agglutination with the typhus bacillus. There may be a slight leucocytosis in typhus, and that together with the abrupt onset, the two types of rash starting the third day, the extreme nervous symptoms in the second week and termination by crisis all help to clinch the diagnosis."

#### PROPHYLAXIS

Hirsch says that the "history of typhus is the history of human wretchedness." Do away with lice and you will have no typhus. Lice are killed by heating to 70°C (158° F.)

#### INSTRUCTION TO DOCTORS REGARDING "TYPHUS."

(Taken from Husk.)

"Wear silk underclothes including socks. Lice are loath to crawl over or take up quarters on a person wearing silk. Very important.

"Clean head and hairy parts of body by using a solution equal parts kerosene and vinegar. Kerosene kills lice, vinegar kills nits. Wrap up affected parts after rubbing thoroughly with this mixture for one hour only—longer use will scald. Wash off twelve hours later with carbolic or tar soap. Repeat operation in twenty-four hours, to be sure none have escaped first treatment.

"Wash or spray all infected quarters with solution of kerosene and hot soap-suds equal parts.

"Boil all infected clothing and bedding.

"Have manta or linen suit made to cover your entire body to neck. This can be done by lying down on a piece of cloth, marking out your outline. Doubling this pattern, sew sides together, put a gathering or puckering string at neck of top. This suit should include legs and feet and arms down to wrists. Paste strip of adhesive around open ends of wrists and use rubber gloves on hands. Over this suit put on boots, rubber preferred, paint a band around these at ankles with crude oil to prevent lice crawling up from floor.

"Sprinkle powdered creolin around your neck and waistband or use a cloth saturated with kerosene and vinegar solution.

"Be careful of your head contact, as this is the only unprotected part.

"Either boil these clothes after visits on returning from infected places or place same in closed box, in which a small can of chloroform is emptied, and after twelve hours all inhabitants are killed.

"Use plenty of kerosene mixed with vinegar; it's the best preventative.

"Carry out extensive bathing, spraying and cleanliness with your workmen, families and quarters.

"All you have to do is to kill all lice in your camp.

"Be energetic and use all measures to gain this end."

In the instruction to doctors mentioned above you will notice that the solutions advised when mixed ready for use are not inflammable, which is an important point. Kerosene, gasoline, benzine or turpentine are good agents, but you may fumigate the city by burning it to the ground before the lice are eradicated. For that reason dichlorethylene and tetrachlorethane are better; as also are vinegar mixed with kerosene. The common phenol disinfectants will not kill lice even after steeping thirty minutes. The volatile oils have no effect. In the Serbian campaign a union suit extending from the toes to the neck with attached gloves was worn next to the skin. This was covered with customary hospital gown and shoes. The hair was clipped short. A surgeon's cap and mask completed the outfit. The outer garments should be removed while standing on a sheet—the whole then wrapped up and sent to be steamed, boiled, baked, or dipped in gasoline.

#### TREATMENT.

Elimination and hydrotherapy are the two most important routine measures to follow. The Murphy drip is used with considerable success. Lavage for temperature above 102 1-2 is very important in reducing the nervous manifestations. Specific medication is not recommended; antipyretics are dangerous, because they make the heart weakness more pronounced. As a result of the serology of this disease mentioned above, there is no question but that a vaccine will be forthcoming soon which will be available for all to use, but till then, let us depend for safety on rigid prophylaxis.

120 N. 1st. Ave.



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THREE CASES OF BRAIN TUMOR

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BY

E. B. ROGERS, M. D., El Paso, Texas

(Read before the El Paso County Medical Society, March 19th, 1917.)

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It is usually considered that in order to make a diagnosis of tumor of the brain one should be able to demonstrate the presence of several of the more prominent general symptoms or signs, such as headache, nausea, vomiting, dizziness, convulsions, respiratory and cardiac phenomena, optic nerve changes, metabolic disturbances and mental signs with sleeplessness.

In order to indicate how varying these may be, I desire to report three cases of brain tumor with comments on their localization.

**CASE 1—TUMOR OF THE PONS.**

Mr. S. 28 years old, married. In April, 1916, he consulted Dr. E. H. Irvin in the belief that he needed glasses. The eye findings at that time showed only a muscular unbalance—heterophoria.

General physical examination in June was negative, except the tendon reflexes, which were exaggerated. There were some indefinite symptoms such as restlessness, unconscious periods of short duration and insomnia. The Wassermann gave a plus-minus result. Anti-luetic treatment for a month improved the eye condition. During the same time the restlessness and insomnia increased. Treatment was discontinued and he left the city for a month's rest.

Upon his return there was found a marked increase in the nervousness, insomnia and general restlessness. While lying on a couch awaiting examination he would apparently sleep for a few seconds, then jump suddenly, turn over, and jerk his head, arms and legs. Short periods of rest would be followed by renewed demonstrations. At times there were sharp muscular twitchings, simulating chorea. He acquired a peculiar habit of pulling his ears, apparently unconsciously, during his restless spells, and if he was permitted to indulge himself in the habit it seemed to quiet his restlessness. His mental condition at times was poor, at others normal. During the periods of nervousness he could scarcely concentrate on a subject long enough to answer questions intelligently. Several years previous, multiple small tumors had developed in the skin which were later shown to be neurofibromata (Recklinghausen's disease).

This condition kept up for weeks, during which time he was under the care of Dr. J. M. Richmond. The restlessness became extreme and was uncontrollable by opiates. Paraldehyd was the only drug that had any effect in overcoming the insomnia. The habit of pulling his ears became so extreme that they were partially pulled off; his head had



Case III. Sella as seen in stereoscope outlined by dots.—Dr. Rogers.



Fig. No. 1, Case No. 63. Breaking down of wound and recurrence two weeks following radical operation for Lymphosarcoma cervical glands. Healed promptly and apparent clinical cure following use of Radium.

to be encased in a plaster paris helmet, and his hands strapped. The restlessness produced muscular hypertrophy and his muscles became as hard as those of an athlete. The spinal fluid was negative. At one time there was a beginning choked disk in the left eye, no other localizing sign developed. He died after a short coma.

The post mortem showed a single glioma of the pons which "largely obstructed the iter and produced an internal hydrocephalus." (Cushing.)

#### CORRELATION OF SYMPTOMS WITH PATHOLOGY.

This is a case marked by the intensity and peculiarity of its symptoms, and an almost complete absence of localizing signs. It is also peculiar in its absence of general symptoms. Headache, that most constant symptom of brain tumor, was present only once and then but for a day. Convulsions, nausea and vomiting were also absent. The tumor in its growth caused obstruction to the aqueduct of Sylvius, thus producing an internal hydrocephalus, since the greater fluid production comes from the ventricles above. The peculiarities of the case no doubt arise from the fact that the symptoms of local irritation outweighed those of pressure caused by a relatively small tumor. The pontine syndrome produced by a tumor in the anterior portion of the pons and cerebellar peduncles would be composed chiefly of choreo-athetoid movements and irritation of the nuclei of the oculomotor nerves. This would account for the restlessness and the heterophoria. The absence of anesthetics and paralyses over the body would mean that the longitudinal nerve tracts were not seriously involved. The habit of pulling his ears so vigorously, apparently without pain, may have been due to analgesia from interference with the sensory tracts of the fifth nerve, though the ears were not anesthetic to touch.

With an absence of headache, convulsions, nausea and vomiting one cannot believe that the aqueduct of Sylvius was fully closed or that the hydrocephalus was marked.

Recalling the fact that the spinal fluid came away without pressure, one can easily believe that this was a dangerous case for spinal puncture. It is in cases of tumor of the hind brain where the fluid is cut off from above that most of the sudden deaths have occurred.

Such tumors are inaccessible to operation and are not favorable for decompression since this would only give additional space for the development of hydrocephalus. The outlook is hopeless from the beginning.

#### CASE II—TUMOR OF THE LEFT ROLANDIC AREA

Mr. H. age 38, freight conductor, family history negative.

*History.* The patient had an injury to his head seven years ago by being squeezed between two box cars. He did not lose consciousness and no physician was consulted. The right shoulder and right side of chest were contused at the same time. Four years ago he had an attack of gall-bladder colic, three years ago an attack of left renal colic. The urine contained albumin and pus. For the past six years at inter-



vals of about six months, he has had a chill, followed by fever, headache, nervousness, and sometimes nausea and vomiting.

*Present trouble.* On May 1st, 1915, he had a convulsion while on his train, and was sent to the hospital here. It followed a chill and he had a temperature up to 101 degrees for several days. A second convulsion followed a chill on May 15th. The urine contained albumin and pus. Cultures gave a pure growth of *B. coli*. The ureters were catheterized once in June, twice in July, and once in August, and the kidney pelvis irrigated with solution of silver nitrate. An autogenous vaccine was prepared and used in the meantime. Severe convulsions occurred August 31st and September 1st. In October the irrigations were continued at weekly intervals. The urine would clear temporarily and cloud again within two weeks. He continued to work part of the time, but during this period he noticed that he had to pay unusual attention to his train orders that he might not forget them.

Another convulsion occurred November 10th. On December 2nd another convulsion seized him at 5 a. m., as he was entering the house from work. This one began a series that lasted two weeks, two to six convulsions daily, consciousness being lost only in the more severe ones. There was no fever, but the pulse went as low as 48. There were headaches, vertigo and vomiting. The left eye showed a beginning choked disk. Serum Wassermann negative, luetin test strongly positive. Spinal puncture gave a clear fluid under increased pressure. This fluid gave a negative Wassermann, globulin plus and cell count 6.

So much relief came from the spinal puncture that it was repeated in a week, but this time his discomfort was increased. Diagnosis of brain tumor was now made.

At the times of the severe convulsions, he had considerable impairment of his mental faculties, especially memory and power of concentration. Otherwise, psychic disturbances have not held any marked position in the symptomatology.

In January, 1916, he went to the Mayo clinic at Rochester, where a diagnosis of epilepsy was made, and he was sent back to us with a prescription for bromides. After his return, on the strength of the luetin and globulin tests he was given a series of eight intravenous injections of salvarsan, together with mercury and K I. During this time his general condition improved somewhat and the severity of the convulsions diminished. A remarkable coincidence was that the urine cleared of pus and bacteria, and there has been no recurrence.

About this time he had a convulsion under observation in my office. It began with rotation of the head and eyes upward and to the right, then clonic contractions of the muscles of the right side of face; later the neck and finally the right shoulder and arm. He did not lose consciousness, but was unable to speak. The convulsions are always preceded by an aura, a peculiar feeling by means of which the patient realizes an impending seizure. If he is standing up he sits down, and always holds his lower lip to prevent its being bitten. At times he will have

someone hold his head to resist the movements of rotation which cause much soreness of the neck muscles. Following the convulsions there are parasthesias in the areas involved, which sometimes extend into the right leg and foot. From this I localized the tumor near the Rolandic area of the left side, probably in the frontal lobe as he had no signs of parietal involvement. About the last of April X-ray pictures were made in one of the laboratories of the city, from which was made a diagnosis of depressed fracture of the vault. In spite of protests, an operation (April 29th, 1916) was necessary to show him the error of his diagnosis.

He went to St. Louis, May 30th, where a diagnosis of epilepsy following injury was made. He went on to Baltimore and was operated upon, July 7th, by Dr. W. E. Dandy in Johns Hopkins Hospital. I quote from the hospital report, following their description of the incision, as follows:

"The dura was noted to be moderately tense, but not especially so. A flap of dura was cut and turned down in the usual way exposing a fairly large area of the cortex. Two striking pathological conditions presented themselves very readily. One was a very definite infiltrating glioma, involving the upper Rolandic area. This growth seemed to extend more in the pre-Rolandic area than in the post, but it seemed to a certain extent to involve both. The area of definite surface involvement was as large as a half dollar, perhaps a little larger. In this area the brain appeared to be quite whitish, compared with the normal looking brain about. On palpation it was considerably firmer. There was also a striking lack of vascularity due apparently to a pressure in this area or in the pia covering this tumor. There was not the slightest indication of a definite line of separation between the tumor and the cortex. Removal was evidently impossible. A small bit of this tumor was removed, for diagnosis. A second pathological change noted was a definite thickening of the pia along the blood vessels and a rather unusually large accumulation of fluid right along the vessels, beneath the pia. This condition present was quite characteristic of the condition so frequently seen in epilepsy. By means of a needle the pia was opened in many of these places and a large amount of spinal fluid was mopped out. Exploration from margin of the incision revealed no evidence of another glioma present. There were no adhesions between the dura and the cortex. The flap of dura was sutured back into proper position. By means of a large giant forcep, decompression was made beneath the temporal muscle. This was made by dividing away the temporal bone, both from the flap that was turned down to the thin bone that extended down under the temporal muscle. A large decompression area was made. Immediately beneath this a star-shaped slit was made in the dura. The bone flap was then returned to its proper position after a drain having been placed beneath it and brought out through the trephine opening posteriorly."

"**Pathological Report.** Specimen is made up of small, round, oval cells slightly irregular in size and shape, composed of a rather vesicular nucleus and of a cell body which is not very prominent and blends into a net-work of glial fibrils, which communicate with those of the neighboring cells. Here and there one sees an occasional large cell which tends toward the pyramidal type of motor cortical cells. Diagnosis:—Brain glioma."—(Dr. Duffy).

Since his return from Baltimore he has had convulsions daily, usually two or three mild ones, but at times several hard ones. Consciousness at one time was lost for a day, during which he had ten or twelve hard convulsions. The eyes are normal, the urine clear, and the signs of increased pressure have disappeared. He is gradually losing weight and the convulsions are becoming more severe.

### CORRELATION OF SYMPTOMS.

By means of exploratory operation we have here the definite knowledge of a glioma in the left motor area. Hence, the outstanding feature of the case is the convulsions—typical Jacksonian epilepsy. This was the earliest symptom. They have been so distressing to the patient that he has repeatedly threatened self-destruction, and their control has been an increasingly difficult problem for his physician. As an early symptom convulsions are a manifestation of irritation of the pyramidal cells of the motor cortex by the ingrowth of glial cells. Provided no accident occurs to terminate the patient's life, we may expect paralysis in the affected muscles when the pressure upon the pyramidal cells in the tumor area becomes great enough to inhibit their activity.

If one studies the spasming area seen in a convulsion he can readily approximate the location and size of the tumor in the Rolandic area, as stated in the hospital report.

The parasthesias might be taken to indicate some post-Rolandic involvement, which could not be extensive since no astereognosis, alexia, agraphia, aphasia, apraxia or auditory involvement were noted. Recently there have been indications at times of aphasia—motor involvement—no doubt due to extension of the tumor into the speech centre. The attacks of severe convulsions that have occurred at three different times have no doubt been caused by hemorrhages into the glioma, thereby increasing the neighborhood irritation as well as the intra-cranial pressure. It was at these times that the slow pulse, headache, vertigo, nausea and vomiting were most marked. Such cases are noted for occasional remission of the symptoms, especially upon treatment by iodides.

The case is typical of motor area involvement and for anyone who had noted the general symptoms and had been lucky enough to observe a conclusion, the diagnosis should not have been in doubt.

A review of the whole case hardly warrants a diagnosis of latent syphilis, and it would seem that the positive luetin test obtained was an error. The remission of symptoms under antiluetic treatment was probably due to the action of the potassium iodid in lessening the edema about the tumor. I have no explanation to offer for the disappearance of the pyuria while he was under this treatment.

### CASE III—TUMOR OF THE PITUITARY REGION.

Sr. F. M., Mexican, age 28, married, wife and 5 children healthy. Family history negative. Present trouble began in November 1915, with attacks of headaches accompanied by nausea and vomiting, though he states that previous to this he had noticed failing memory and that at times he was unsteady or dizzy (borracho). About March, 1916, he began noticing failing vision, first in the left field of the left eye, later in the left field of the right eye. He remembers this because of his inability to see moving objects on his left side. His vision failed steadily, the left eye always worse than the right. Headaches and



vomiting continued intermittently for the next eight months, resisting all treatment. In July he had three or four attacks in which for a short time he lost consciousness, but had no convulsion. About September exophthalmos was noticed.

In November he consulted Dr. E. R. Carpenter about his eyes. The original nausea and vomiting were still present, and he had lost some thirty pounds weight. Exophthalmos was extremely marked, and he was so nearly blind that he had to be led about. The eyes showed an almost complete optic atrophy, upon which a choked disk had developed. Upon this was based a diagnosis of tumor.

The general examination was negative, except for an exaggeration of the tendon reflexes and eye reflexes corresponding to the local conditions, reacting neither to light nor accommodation.

His serum Wassermann was negative as were also the blood counts. The spinal fluid gave a negative Wassermann, cell count 10, globulin double plus, and normal Fehling. The X-ray by Dr. Catheart showed an excavation of the sella turcica. About this time there appeared a glairy mucus discharge from the nasopharynx and the exophthalmos seemed to diminish. There was marked insomnia, also much dizziness and restlessness. His mental condition showed impairment—power of memory and concentration failing. He was placed in the hospital and a right sided sub-temporal decompression done at the clinic of the Southwestern Medical and Surgical Association last December. Following this the choked disk returned almost to normal but there has been no improvement in vision. The nausea and vomiting ceased and the headache diminished. The insomnia became less and there has been a general feeling of improvement.

The examination at present shows total blindness. The headaches are again increasing in severity and there is occasional nausea and vomiting. Exophthalmos is slightly more noticeable and the choked disk shows a tendency to return. There has been no change in the sense of smell (anosmia). Sexually there has been no marked change; probably no more than should be expected from any man with his degree of distress. Since six months ago he has noticed a tendency to impotence. A test of his sugar tolerance has been made. He was given 200 grams of glucose at one meal in addition to the regular starches and sugars of his daily diet. No sugar appeared in the urine. He was then given 320 grams with the same result. This was followed by 320 grams of dextrose. The urine passed during the day contained no sugar.

#### DISCUSSION OF SYMPTATOLOGY.

Among the many features of this case the eye conditions are at once the most interesting, and probably the most distressing to the patient. Tumor having been diagnosed from the general symptoms, the development of a primary optic atrophy would lead one to look for direct pressure on the optic nerve. The early left homonymous hemianopsia localizes this pressure upon the right optic tract, probably just posterior to the commissure. In a short time the right fields were also



affected, due to pressure upon the left optic tract, and the resulting atrophy was complete. The later development of choked disk upon the optic atrophy is due to increasing intra-cranial pressure and the sequence is considered pathognomonic of tumor in the region of the optic tracts. Pressure upon the cavernous sinuses aids the mechanism producing the choked disk. This same pressure upon the cavernous sinuses is also the principal cause of the exophthalmos, which results from congestion between the point of obstruction and the eye-ball. Decreased exophthalmos following the decompression could only mean that the general intra-cranial pressure also had something to do with its production.

Considering the location of the pressure it would seem that there might have occurred palsies of the oculo-motor nerves before this time. Some nystagmus is the only indication of possible motor nerve involvement in this case.

Repeated X-ray examinations showed an excavation of the sella turcica with irregular, indistinct outlines to probably three or four times the normal size. This was shown best in stereoscopic pictures, but was plain in single plates.

The mucus discharge from the naso-pharynx no doubt came from the sphenoidal cells following temporary closure of the sphenoidal foramina. The relief that occurred about this time resulted either from discharge of this pent-up mucus or from the tumor breaking into the sphenoidal sinus from above, thus in either case relieving the pressure.

Cushing divides pituitary tumors into three principal groups (1) those with hypopituitarism, (2) those with hyperpituitarism, and (3) those in which the tumor, or neighborhood, symptoms are predominant.

Cases of hypopituitarism show adiposity, increased sugar tolerance, lowered body temperature and reversible sexual changes, or impotence. In children there are sexual infantilism, skeletal undergrowth and psychic disorders. Injections of posterior lobe extract cause emaciation.

Hyperpituitarism shows gigantism in children and acromegaly in young adults; decreased or decreasing carbohydrate tolerance; adiposity; hypertrichosis; and skin changes.

The case before us evidently belongs to the third, or tumor symptom class. The symptoms have been of short duration and marked intensity and without striking signs of dyspituitarism. The increased carbohydrate tolerance is the only important sign of hypopituitarism. The great improvement in the symptoms and disappearance of the choked disk following the decompression were something of a surprise, as so much relief had not been expected. Improvement in vision of an atrophic nerve could not be expected. That this improvement is to be of short duration is indicated by the present return of symptoms. It does not seem that so much returning pressure could come in so short a time from the tumor growth alone. It is highly probable that the tumor

growth has pressed upward closing the foramina of Monro, thus causing an internal hydrocephalus of the lateral ventricles, and rapidly increasing the intra-cranial pressure. No doubt a larger decompression would have given relief for a longer time.

The present indication is to give relief by further decompression, either of the left temporal area or of the sphenoid over the tumor. The latter has the advantage that it may give longer continued relief if the tumor is malignant, and in case of a non-malignant tumor or cyst it might even be curative. The trans-sphenoidal operation has been perfected through the contributions of a number of surgeons, until the mortality directly attributable to the operation has been reduced to about 15%. The principal causes of death have been meningitis, intra-cranial hemorrhage and increased pressure phenomena.

INDUSTRIAL INSURANCE.

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BY

DR. ROBT. FERGUSON, of Bisbee, Ariz.

President's Annual Address before The Arizona Medical  
Association, Douglas, April 18th, 1917.

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During the past two years, the American association for labor legislation has been educating the public on the subject of Compulsory Health insurance; this same organization was instrumental in giving us workingmen's compensation laws, in about three-fourths of our states.

The United States Public Health service is also interested in this question, and Rupert Blue says it is bound to be the next great step in social legislation and it will be one of the big questions for our profession to face in the near future.

Germany, under Bismarck and Great Britain under Lloyd George, and several other European countries have adopted this system, and in spite of many difficulties, the results have been good to the extent of giving adequate medical attention to the workingman for a small expenditure of money.

Bills for compulsory health insurance have been introduced in New York, New Jersey and Massachusetts, and although none have passed as yet, it is probable that with further education of the public as to its advantages, their success may be assured; it may not be a matter of common knowledge that such a bill was introduced in our own state at the meeting of the last legislature, but was killed in committee; the Christian Scientists were familiar with this bill and were most active in their efforts to defeat it.

I do not think that any one will object to the principle of health insurance any more than they would to life insurance; it would seem a sensible thing for the workingmen of small means to pay a certain premium to some insurance carrier so that they would receive some money benefits when not able to work and be able to afford proper medical attention.

It is claimed that this will not be done voluntarily and therefore must be obligatory; in fact Belgium had a form of subsidized voluntary insurance, but was preparing to make it compulsory just as the war broke out.

The proponents of this measure start with the assumption that three parties are responsible for the sickness: the employer, employee and public. For example, the employer is responsible for sickness due to long hours of labor, excessive fatigue, bad condition of ventilation, light, etc.

There is an occupational hazard, as is shown by loss of days from sickness per year, which in one place was found to be four day for clerks and salesmen, twelve and a half days for iron and steel workers and fourteen and a half for refiners in sugar factories.

The employee is responsible for the sickness due to improper hygienic environment in the home, injurious habits, poor diet; the public for improper housing, impure water and food; it is estimated that we have in this country about thirty million wage earners, that each loses an average of nine days a year from sickness, making the annual loss at two dollars per day to equal eight hundred million dollars; this is certainly a great economic loss for the country.

Because of this division of responsibility, a bill has been framed to make each party share in the cost; the employer and employee each to pay two-fifths and the public one-fifth of the cost.

It is claimed that the majority of workingmen do not receive wages enough to be able to set aside something for a rainy day, and when sickness comes they are easily forced over the border line from self-respecting wage earners to those who are destitute and objects of charity. We are told that only the rich and very poor receive adequate medical attention; the rich can afford to pay for it and the poor receive it in our charity hospitals.

Health insurance is supposed to apply only to wage earners and therefore would not do away with the large amount of charity work which is always to be done.

There is an elaborate machinery for administering the funds which I will not take up your time with, except to point out that each small district has control of and administers its own funds and it is provided that there shall be representation of medical men and health boards on all committees; the one essential and indispensable thing is to have the doctors to do the work.

The model bill calls for a panel of doctors in a certain area or district, on which any duly registered doctor may be enrolled; there is to be free choice of physicians up to certain limits, not more than five hundred families to one doctor, and a doctor may refuse any patient choosing him if he so desires, but having once accepted, he must answer that person's calls for a certain definite time.

The duties will be to give ordinary medical care at home or in the office; in addition there are to be dispensaries for consultation and special treatments, in fact places for group medicine; there must also be hospitals for those needing such care.

There is to be a separation of the function of certification and treatment, that is, there shall be in each district a full-time medical officer who shall certify when a patient shall receive benefits or go back to work; both



treatment and certification have been done by the same man in Germany and this has been the cause of much difficulty and strife.

In payment for services, three methods are possible, by capitation, visitation or a combination of the two, or by salaried physicians.

By capitation the doctor receives so much per patient per year; this is the method of lodge practice and is the method employed in England; this method is pretty generally disliked, both by doctors and people; it produces hurried work of poor quality.

The method of visitation is better; by this method the doctor charges up each visit against the funds; this is more expensive but has worked all right in some places.

The minimum benefits under this act are as follows:

1. Medical, surgical, dental and nursing attendance and treatment.
2. Medicines and medical and surgical supplies, as eye glasses, trusses, crutches, etc.
3. Sick benefits equal to two-thirds wages.
4. Maternity benefits.
5. Funeral benefit, up to one hundred dollars.
6. Medical and surgical attendance and supplies for dependents.
7. Laboratory facilities and specialists.

This attendance shall not be for more than twenty-six weeks in any consecutive twelve months.

Irving Fisher says that health insurance is needed to tide workmen over grave emergencies incident to illness, to reduce illness itself, lengthen life and abate poverty, improve working power and so raise wage level and diminish causes of industrial discontent.

Disraeli said "The public health is the foundation on which reposes the happiness of a people and the power of a country." This is an age of co-operation, and health insurance is simply the co-operating of individuals for the better care and protection of the health of their members.

There is no doubt that it will stimulate measures for the prevention of diseases, as the workingmen's compensation laws produced the Safety First movement, so it is expected that compulsory health insurance would produce a Health First movement; the employer and employee co-operating with health officer, would be vitally interested in prevention of disease; poverty would be decreased, life lengthened and some of our social discontent would vanish when employer and employee were brought together on a common ground in health insurance work.

It is much harder to feel satisfied as to the effect of this system on our profession; it has been said that few things were more surprising to the public than the unexpected threatening attitude of the medical profession in Great Britain.

The community has been so accustomed to regard medical men as amiable weaklings in business matters, easily gulled by piteous tales or flattering remarks about the magnanimity of the profession, that a strike of doctors seemed amusing to them.

The same was true in Germany where a union of doctors was formed and a strike successfully carried out in at least one city.

The doctors were taken into this thing without their consent and without proper representation in the organization, and because they had always done much charity work, were supposed to do this work for very little pay as it was essentially work for poor people.

It was not realized that the cost of education for physicians is higher than for other professions, that they have different standards of living from the laborer and must be paid adequately to allow them to live up to such standards; these evils have been corrected as far as possible in the model bills of this country, but there are still other evils which are inherent in the system.

We might find an increase in the average income of physicians as it is claimed in Great Britain, but we would have a loss of the competition which tends to develop better service, and in its place a competition as to who would have the best pull with some union or organization so as to get a certain number or class of patients on his list.

There would be a change from the personal, confidential, friendly relation to a corporate and commercial one; the physician is reduced from a professional man to a salaried worker and member of a trades union.

It is admitted in Great Britain that although a larger volume of work is done than formerly, the quality of the work is not proportionately improved; the physician is more likely to hurry his work and not take special interest in it.

The reason for this is the great demand on his time for treatment of petty ailments or imaginary ones simply because the patient pays a certain fee and it costs nothing to bother the doctor; the patients show no consideration for the doctor and cause him to make numerous calls at disagreeable times and there is no redress; the average employee is an autocrat when he gets the chance and makes a poor boss; there would also be an increase in drugging, for the ordinary laborer is not satisfied with advice but must always have some medicine or appliance to use.

The success of compulsory health insurance depends largely on the physicians, and how can they be expected to enter enthusiastically into this system when they feel they are being exploited and are being asked to go into a form of practice which is degrading and held in contempt and in which there would be a certain loss of independence?

There would be some benefits which appeal to us as medical men besides the ones already mentioned; the lodge doctor and hospital association

would probably cease to exist; the patent medicine and self-drugging evil would be decreased and Christian Science and other issues would be dealt a severe blow.

At the present time there does not seem to be much demand for health insurance from any of those vitally interested. This legislation is slow in materializing, but by an elaborate system of publicity and education may be forced upon us.

It behooves us, therefore, as those who are deeply interested in their profession and who love it for its glorious past and are jealous of its future status, to think well over these matters and to obtain by united action, the best law possible if the necessity is forced upon us.

#### CONCLUSIONS.

I am opposed to compulsory health insurance because it is an undesirable form of practice which would bring us no respect and would lower our profession to that of a wage-earner; also because committees made up of employer and employee would have control of medical affairs, about which they know nothing.

*Second:* Unfair to employer: While I believe that employers should be made responsible for all occupational diseases and hazards, proper ventilation, lighting and working conditions, I do not see why he should be responsible for accidents off duty, and most of sickness of employee and family; if wage earner does not get enough to live properly, wages should be increased.

*Third:* It would not assist the submerged part of the population and would tend to pauperize and discourage thrift and saving in those supposed to be benefited.

*Fourth:* If the public is to be taxed to furnish medical care to wage earners, there is no valid reason why it should not pay for food, clothing, housing, etc.

# Southwestern Medicine

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VOL. I

El Paso, Texas, May, 1917

No. 5

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## EDITORIAL

### ABOUT OURSELVES.

While some of the members of one of the organizations interested in this journal are finding fault with the editorial and business management for no real reason in particular and for every reason in general, we are pleased to reproduce the following editorial reference to SOUTHWESTERN MEDICINE taken from the April issue of the Southern Medical Journal.

#### SOUTHWESTERN MEDICINE.

This is the result of an amalgamation of The New Mexico Medical Journal, The Arizona Medical Journal and The Bulletin of the El Paso County (Texas) Medical Society, and is the official organ of the Medical and Surgical Association of the Southwest.

The first number appeared in January of this year as a monthly. It is a very creditable publication from a literary and scientific standpoint. Such a journal is especially worthy of the hearty support of every physician within its territory and of the high esteem and praise of the profession in general when it is remembered that its advertising section is of the cleanest and most ethical nature and that no proprietary preparations will be considered unless they have been accepted by the Council of Pharmacy of the A. M. A. A policy of this character means a financial loss of thousands of dollars a year, but it likewise shows the courage and high ideals of its editorial and business staff.

Just here and now it may be *apropos* to suggest that the very best way to justify the existence of this journal and make for its greater usefulness is a hearty co-operation on the part of all of the ethical medical men of this southwestern country, whether they be within the ranks of organized medicine or not and there is no surer way of defeating the object and purposes of SOUTHWESTERN MEDICINE than to pull apart.

SOUTHWESTERN MEDICINE is a necessity and has come to stay; it needs the support of each member of the profession and of a united profession. We can fight our personal battles among ourselves in our society meetings and in our committee meetings, but when it comes to "good of the order" the time for personalities and such like is past.

This is our first and last editorial utterance on the subject. We shall not refer to it again but we do not want this silence to be interpreted as being for any other reason than that we feel that the space can be given to more important matters.

R. E. McB.



The New Mexico Society For The Study and Prevention of Tuberculosis has been discontinued, having merged its identity with a new organization recently formed and known as The New Mexico Public Health Association.

The new organization has a wider scope and a broader field in which to labor. Nathan Jaffa of Roswell is president and Doctor A. G. Shortle of Albuquerque is secretary. A board of directors composed of some thirty representative people, both medical and lay, has charge of the workings of the society with an executive committee of five to direct.

An immense amount of good work can be accomplished by this organization as New Mexico offers a fertile field for such labors. Public health legislation is needed but the people must be educated up to it. At the last session of the New Mexico State Legislature an effort was made to provide a full time state health officer, trained in public health work, but the effort was unavailing for the reason that "there is no sentiment in New Mexico for public health" as we are informed on good authority by some members of the Legislature, yet this same Legislature passed a bill licensing Christian Science.

Verily, the ways of some men are "past understanding."

SOUTHWESTERN MEDICINE wishes the new society every success and will be pleased to help in any possible way.

The American Medical Association will hold its annual meeting in New York City June 4th-8th inclusive. The attendance should be large and the meeting a successful one.

We trust that the spirit of the hour will melt some of the frigidity we have noticed at some of the A. M. A. meetings and that a spirit of get-together will be manifest. In this connection we believe that the House of Delegates could do nothing to advance the interests of the Association in greater degree than to break away from custom and take some big-hearted, broad-minded general practitioner and make him president. Get away from the universities and colleges and hospitals and get out into the wide-open country and find a president for once. We have no fault with any of the selections, but now and then—once in a generation at least—a president should come from the real firing line of general practice. There are many such in this country. To hunt is to find.

The Journal of the American Medical Association in its issue of May 5th heads its editorial columns with an appeal to the patriotism of its members. We reproduce it here and echo its sentiments.

**THE TIME HAS ARRIVED FOR ACTION. PHYSICIANS, ESPECIALLY THE YOUNGER MEN, WHO HAVE BEEN DELIBERATING AS TO WHETHER OR NOT THEY SHOULD OFFER THEIR SERVICES TO THE GOVERNMENT SHOULD DECIDE NOW. STOP DELIBERATING AND ACT. NOT THAT THERE IS AN IMMEDIATE NEED FOR YOUR SERVICES, BUT THERE IS IMMEDIATE NEED THAT THE GOVERNMENT SHOULD KNOW ON WHOM IT CAN DEPEND SO FAR AS ITS MEDICAL OFFICERS ARE CONCERNED.**

## ATTENDANCE

All who attended the Arizona State meeting at Douglas, must realize the good that is being done by that Association. The attendance was not what it should have been, but as is usually the case, most of the progressive physicians were there. The program covered a number of important and up-to-date subjects. Many absent members within shouting distance of the meeting place, would no doubt, have derived some benefit by attending the meetings. Of course, we all realize the difficulties of attending meetings in our home locality, but if some thought were given to this matter, a greatly improved attendance, and consequently added enthusiasm would result.

The state lines should be ignored in the matter of attendance. Nothing would promote the welfare of southwestern medicine so much as more exchanges of courtesy from one state to the other.

The Medical and Surgical Association of the Southwest was brought into existence with the idea of establishing a more intimate relation in the profession of New Mexico, Arizona and West Texas. Unless the majority of members make sacrifices to attend the meetings of this organization, it will not fulfill its object. A good program alone does not make a successful meeting.

**BEGIN MAKING YOUR PLANS RIGHT NOW TO ATTEND THE  
NEW MEXICO MEETING AT LAS CRUCES IN OCTOBER!**

## BOOK REVIEW.

**A MANUAL OF THERAPEUTIC EXERCISE AND MASSAGE DESIGNED FOR THE USE OF PHYSICIANS, STUDENTS AND MASSEURS, BY C. HERMANN BUCHOLZ, M. D. ILLUSTRATED WITH 89 ENGRAVINGS. AREA AND GEBIGER, PHILADELPHIA AND NEW YORK, 1917.**

This book, if read carefully and its contents applied, could be of a great deal of assistance to both internist and surgeon. It deals with exercise, active and passive, in the treatment of diseases, deformities and injuries, and also with regard to prophylaxis. The historical chapter is interesting. Active and passive exercises are taken up, giving indications and technique, with good illustrations of various points. The chapter on the influence of exercise on the general health and the special systems of the body is good. Massage is carefully described, giving methods, and how to massage each part of the body. Its indications and effects are entered into exhaustively; the general practitioner and surgeon can obtain in this book invaluable data on the treatment of stiff joints, contractures, fractures, dislocations, sprains, delayed union, arthritis, faulty posture, kyphosis, lateral curvature, paralyses and muscular spasmodic conditions. It supplies information that is lacking in textbooks on both practice and surgery. A reading will be well repaid.

ELLIOTT C. PRENTISS.

**Cyanocuprol.**—Studies of the effects of "cyanocuprol" on tuberculous processes, carried out by Japanese investigators, have been published. "Cyanocuprol" is stated to be a copper cyanid preparation, the exact composition of which is being kept secret. Even if its identity should become known, the use of "cyanocuprol" is decidedly in the experimental stage (Jour. A. M. A., April 7, 1917, p. 1057).

**Ambrine.**—Ambrine is a French, secret preparation that has been on the market for many years. It has recently come into prominence through sensational articles in the lay press. For all practical purposes it is solid paraffin to which some material has been added to make it adhesive and more plastic. For use it is heated until liquid and then applied to open wounds and burns, forming a relatively impervious dressing (Jour. A. M. A., April 7, 1917, p. 1057).

**Paraffin Films.**—The popular propaganda for "Ambrine" having brought the paraffin film treatment of burns into prominence, Torald Sollmann has instituted experiments to devise a suitable, open formula preparation which is simple and yet meets all requirements. He suggests that surgeons who desire to experiment with the paraffin treatment of burns use simple preparations of known composition. Ordinary paraffin melting at about 50 C. (122 F.) appears to possess practically the mechanical properties of "Ambrine." A mixture containing some asphaltum (asphalt varnish, Trinidad or Bermudez, "asphalt cement" and Texas asphalt were tried) gives a preparation of superior pliability. Other formulas are given and their trial suggested (Jour. A. M. A., April 7, 1917, p. 1037).

**Corpora Lutea (Soluble Extract).**—The Council on Pharmacy and Chemistry reports that "Corpora Lutea (Soluble Extract)" marketed by Parke, Davis and Co. in the form of ampules for hypodermic administration is ineligible for admission to New and Nonofficial Remedies, because it is a secret preparation advertised under extravagant claims. No statement of composition is made beyond the indefinite claim that it is an aqueous solution of "soluble Corpora Lutea Extract," each ampule corresponding to 0.2 Gm. desiccated gland. How these soluble products are obtained, whether they represent all the water-soluble principles, or whether some have been eliminated is not stated. The claims made for the action and uses of the preparation do not make clear the essentially experimental status of the article and are therefore misleading. Further, the use of this extract is advised not only in functional amenorrhea and the ordinary reflex consequences of physiologic or artificial menopause, but also in conditions where the expectation of benefit cannot possibly be fulfilled (Jour. A. M. A., April 7, 1917, p. 1056).



**Sterling Violet Ray Generator.**—This is a small frequency apparatus with some vacuum and possibly other electrodes. The apparatus is not one for producing violet or ultraviolet rays in the scientific meaning of those words. The apparatus will not do the things claimed for it in the advertising booklet, which includes the treatment of practically every ailment known to mankind (Jour. A. M. A., April 14, 1917, p. 1141).

**Pharmacology of Stovaine.**—M. I. Smith and R. A. Hatcher find that in toxic doses stovaine produces death in animals by inducing immediate and simultaneous paralysis of the heart and the respiration, the action on each being independent of the other. They find that stovaine disappears rapidly from the blood stream after its intravenous injection. Stovaine is slightly more toxic than novocaine but similar modes of administration and complete recovery do not follow the administration of toxic doses of stovaine so promptly as it does with corresponding doses of novocaine (Jour. Pharm. and Exp. Thera., Jan., 1917, p. 231).

**Hexamethylenamin in Pyelitis.**—I. A. Abt advises caution in the administration of hexamethylenamin in the pyelitis of infants. It should be under continuous observation and its use should be continued for an extended period. The urine should be frequently examined for blood. Abt has more than once seen cases of fatal nephritis which he believes due to the overuse of hexamethylenamin. He advises that, if given to infants under one year of age, it should be given in one grain doses followed by water. This dose may be repeated four or five times daily (Jour. A. M. A., April 14, 1917, p. 1100).

**Abolition of the Salvarsan Patent.**—The Chicago Medical Society and the St. Louis Medical Society urge the abolition of the Salvarsan patent. The patent should be abrogated, not only because the patentees have not supplied the demand, not alone because they have dictated to the medical profession who should have the drug and how much a physician might have, not alone because of the war with Germany, not alone because of the special needs of the government at this time for the control of venereal diseases, not alone because, as some claim, the patent at Washington does not correctly describe the product, but also because the people who are supplying this product are charging prices that are exorbitant. In order that a sufficient supply, to control the ravages of one of the most serious diseases that afflict humanity, may be assured, it is the duty of Congress to abrogate the Salvarsan patent (Jour. A. M. A., April 21, 1917, p. 1187 and 1203).

#### NEW AND NON-OFFICIAL REMEDIES.

**Ferric Cacodylate; Iron Cacodylate.**—A ferric salt of cacodylic acid containing from 39.7 to 44.9 per cent arsenic (As). A grayish-brown powder, soluble in water. The use of ferric cacodylate has been proposed in cases where the effects of iron salts and the mild arsenic effect of cacodylates is desired. Dosage: From 0.015 to 0.1 Gm.

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**Ampules Iron Cacodylate-Squibb, 0.03 Gm.**—Each ampule contains ferric cacodylate 0.03 Gm. in 1 Cc. solution. E. R. Squibb and Sons, New York (Jour. A. M. A., April 7, 1917, p. 1043).

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Yavapai: A. C. Carlson, C. S. Vivian.

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Dr. T. B. Smith presented his paper on "Abdominal Cesarian Section with Local Anesthesia," with citation of cases. It was discussed by Drs. Holt, Bacon, McPheeters, Sweek, Thomas (R. E.) Goodrich, Redewill and Smith (closing). The discussion ranged from the proper indications for this operation, to the proper technic for performing it.

The afternoon of the first day was given over to the papers presented by the members of the Medical Corps of the United States Army, which formed an unusual and intensely interesting feature of the program.

Capt. Wm. A. Allen presented a paper on "The Ambulance Company;" Major Craig R. Snyder read a paper on "The Administration of a Base Hospital," and Capt. Edwin P. Tignor on "Dentistry's Share in Preparedness." These papers were discussed by other members of the Medical Corps.

Dr. F. T. Wright presented a paper on "An Anomalous Arrangement of the Distal Portion of the Ileum," which was discussed by several members.

The first day of the session was closed by a reception given by the wives of the Cochise County doctors, at the Country Club.

The Annual Banquet of the association was held Wednesday night, at the Country Club, presided over by Dr. F. T. Wright of Douglas.

The second day's session was opened by the address on medicine, delivered by Dr. Dudley Fulton of Los Angeles, his subject being "Renal Insufficiency."

Dr. W. W. Watkins presented a paper on "Roentgenography of Lung Syphilis and other non-Tuberculous Chest Conditions," illustrated by plates showing the conditions described.

Dr. W. O. Sweek presented a paper on "The Auto Sensitized Serabacterin," which the author was the originator of during his association with Dr. Murphy in 1914. The discussion on this paper was cut short by the adjournment to visit the moving films depicting War Surgery in Europe, contributed by the Cochise County Society.

In the afternoon, the following papers were presented:

Dr. A. W. Vannemann, on "Observations on Ductless Gland Therapy."

Dr. J. I. Butler, "Hodgkins Disease and Some Features of Hemic Cellular Pathology."

Dr. Bim Smith, "A Little Mexican Medicine."

Dr. G. H. Fitzgerald, "Comebacks."

These papers closed the scientific program of a very interesting meeting.

The next annual meeting will be held at the Grand Canon, as a token of appreciation of the association for their faithful societies in the northern part of the State, Mohave, Coconino, Navajo and Apache.

#### NECROLOGY.

The Arizona Medical Association has suffered the loss of two members during the past year:

The Mohave County Medical Society reports the death of their pioneer member, Dr. Alexander M. Cowie, at Kingman, March 18th, from bowel perforation. Dr. Cowie had lived and practiced in Kingman for 22 years; he was born in Canada in 1864; graduated from McGill University in 1887, and for eight years was ship surgeon in the Merchant Marine, coming to Kingman in 1895.

At the time of his death, and for many years previous, Dr. Cowie was Secretary of the county society and county physician.

Maricopa County Society reports the death of Dr. John W. Foss, during the summer of 1916. Dr. Foss graduated from Vermont Medical College in 1890, and from Harvard Medical School in 1899, coming to Phoenix the same year. He was secretary of the association for seven years and was elected to the presidency at the Tucson meeting in 1910. He was active in all civic improvements and was president of the Chamber of Commerce in Phoenix for a number of years. He contributed, to a large degree, to the upbuilding of this association by his untiring labors in its behalf and was held in the greatest esteem by its members. The cause of death was nephritis.

In the deaths of these two members, the association has lost two of its sterling characters, whose lives were an inspiration and an example to our younger men, and who will be missed by us all with profound regret.

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# Southwestern Medicine

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## REST AND EXERCISE IN THE TREATMENT OF TUBERCULOSIS

BY

W. T. MURPHEY, M. D., Medical Director, Murphey's Sanatorium,  
Albuquerque, N. M.

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(Read before the joint meeting of the 35th annual session of the New Mexico Medical Society, and the Medical Society of the Southwestern Conference on Tuberculosis.)

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It is the purpose of this paper briefly to show that both rest and exercise have a place in the therapy of tuberculosis, and to point out the function of, and the indication for each procedure. Exercise, as commonly understood, is the use of the muscles. All life, of course, demands a certain amount of exercise and could not go on without it. When we speak of exercise, therefore, we mean a use of the muscles over and above that minimum which is inseparable from life itself.

### THE PHYSIOLOGY OF REST

During rest the combustion of fuel, and the production of fatigue substances are minimized, and the lessened demands on the body give the tissues a chance to recuperate. Thus, food is stored for future use, the heart is relieved of its burden, elimination is no longer taxed, the temperature falls, weight is gained, there is an improvement in the digestive and other functions, and there follows a return to the feeling of health and strength. The body, now rested, is ready for new demands.

I have dwelt somewhat on these simple physiological facts because I believe that it is only through a thorough understanding of them that we can arrive at an appreciation of the function of rest and exercise in disease.

We have seen then, that in health the body can compensate for a considerable degree of fatigue provided that an adequate period of rest follow the accumulation of waste products.

### THE PHYSIOLOGY OF EXERCISE

The effects of exercise in the normal individual are so well known as to need but a passing mention. I need simply refer to the fact that as the result of increased muscular contractions all functional activities are stim-

ulated, the heart develops greater strength, the flow of blood and lymph is accelerated, the lungs become more active, (the oxygen intake is increased and more carbonic acid gas is given off) ; the various other organs and glands share in this increased activity, so that appetite and digestion are improved, elimination is increased and nutrition is placed on a high level.

Now it must not be forgotten that this increased functional activity demands an increased expenditure of the chemical resources of the body; the food which has been stored up for use is burned up at a faster rate to supply the necessary energy. At the same time the formation of waste products, the result of the greater combustion, is also increased. These waste substances—chiefly lactic acid and carbonic acid gas—have a definite physiological function and in small quantities act as a stimulant to the various organs and tissues. When exercise is prolonged or excessive, however, the accumulation of these substances exerts a depressing influence and is distinctly harmful to the body.

The symptoms which are the result of the excessive accumulations of these "fatigue substances," as they are called, are general fatigue, a febrile reaction, cardiac and respiratory embarrassment, functional depressions of the various bodily activities, impairment of appetite and digestion, loss of weight, etc. It is thus evident that exercise, when indulged in within certain limits, exerts a beneficial effect, but if pushed too far carries with it a train of symptoms which are indicative of exhaustion.

It is a fact familiar to all that in the healthy individual a considerable degree of fatigue may be promptly recovered from without injury and that the ill effects of the accumulation of fatigue substances are gotten rid of by the means of rest.

#### THE THERAPEUTIC PRINCIPLES OF REST

Turning now to a discussion of the recovery from fatigue in disease, we find that an entirely different problem is presented. Thus, in tuberculosis the body has a double duty to perform; not only must it make good the natural loss as in the normal individual, but it must combat the poisons of the disease as well; and the inability to shoulder this double burden gives rise to symptoms which are like those of fatigue, viz., elevated temperature, increased pulse rate, mental and bodily tire, digestive derangements, etc.

This brings us at once to the application of the principles of rest and exercise in the treatment of tuberculosis. Aside from the direct injury that exercise may cause to the lungs, it is plain, I think, that so long as there are symptoms which point to already overworked organs, instead of adding to the efforts which the body must make (as was the case when violent exercise was advocated), we should, on the contrary, attempt to lighten by every possible means the load which the body shall carry. It cannot, therefore, be too strongly put that during active stages of tubercu-

losis exercise is to be regarded as an additional and unnecessary burden, and that during this period our best means of successfully fighting the disease is by reducing the expenditure of energy to a minimum. This is accomplished through the institution of rest.

Rest in the treatment of tuberculosis is absolute or relative. The amount of rest depends upon the physical condition of the patient and should be carefully and intelligently prescribed by the physician in the same manner as any drug. Where the physical findings and symptoms show active trouble and the condition progresses, absolute rest is indicated. On the other hand when the active stage of the disease is checked, relative rest and exercise must be intelligently directed and faithfully carried out. Happily the old era has passed when individuals with active tuberculosis were advised to take all the exercise possible. More relapses, more failures to recover, are due to over-exertion than any other cause. Rest in bed is essential in all early cases of tuberculosis for some time, as well as for any patient who is not doing well.

A fundamental principle in the repair of tuberculous tissue is rest. A tuberculous joint is rested by putting it up in a splint; in tuberculous pleurisy, limit the excursions of the chest by means of adhesive strips; in pulmonary tuberculosis, if the process is active, general rest is prescribed.

To those who have not made a special study of the disease, the good results obtained by rest would seem almost chimerical, and yet they are demonstrable verities. Even without the administration of drugs the fever disappears, the night sweats diminish, cough grows less, and the patient takes on flesh. I think this doctrine of rest is not now disputed by those having considerable experience in the treatment of this disease.

Rest is one of the most powerful and essential means of cure. It is as necessary as air and food, because it enables the invalid to take both in a sufficient quantity to improve the nutrition by taking up fresh material and removing the waste and thus to fight a battle with a fair chance of success. Without rest you cannot get results in the treatment of phthisis.

The widespread ignorance in this country of the harmfulness of exercise in the febrile stage of consumption is as shocking as it is surprising. Patients are often sent to me by eastern doctors for a change in climate and are told by their family physicians that when they arrive they should get out and "rough it."

In the first people's Sanatorium in America, established at Saranac Lake in 1884, by Dr. Trudeau, violent exercise was recognized as injurious and rest out of doors was enforced in all cases which showed any rise of temperature.

Dr. Trudeau, in a letter to me said: "I was one of the first, if I remember, to advocate the rest cure, and for many years had to stand my share of abuse about it. I remember distinctly getting up in medical meetings and being sat upon on all sides by the gentlemen who said 'rest was



very well, but how was a consumptive to keep up his appetite unless he exercised?" Then my own men here did not believe in it at first, and it took some time for them to accept the fact that the very best way to treat a tuberculous process which shows any degree of activity is by rest. At any rate, I want you to know that I have always been thoroughly in favor of rest, and that even now I find myself standing out against the new doctrine of curing people by exercise. I cannot help but feel that although, of course there are cases that are much benefited, especially by graded exercise, the fact still remains that when a tuberculous process shows any degree of activity rest is the safest plan to follow. I know that I have hurt nobody by rest, but I am quite sure I often have by allowing them to exercise. Perhaps this was due to want of caution on my part, but I should say, as I always have, when in doubt it is safer to rest your patient, and I know in this you will agree with me."

The good effects of rest are often shown in a few weeks' time, pulse and temperature falling, cough and expectoration becoming less, strength and spirits improving. In other cases it may take several months before the good effects become manifest.

It is as ridiculous to exercise an active lesion in the lung as it is to exercise a broken arm with the expectation of it uniting. The constant automatic activity of the lungs during inspiration and expiration makes it impossible to place this vital organ to absolute rest. This is why a tubercular lesion of the lung is so hard to heal. With this in mind we can see the importance of physical rest, as exercise puts the lung to extra movement. This is the reason why we were expecting so much from artificial pneumothorax, or lung compression, but this treatment so far has been everything but encouraging as it is only indicated in such a few selected cases.

#### WHEN TO EXERCISE

The duration of rest in bed will therefore depend upon the behavior of the individual patient; as symptoms subside and strength improves he is allowed a little more latitude, sitting up for a short time daily, the periods being gradually increased until the invalid or reclining chair is substituted for the bed. The best form of exercise is walking. At first it should be dosed out very grudgingly, prescribed in five minute doses, once, then twice daily, beginning with a walk in the morning and increasing by a few minutes until a walk of an hour or more is taken both morning and afternoon. This will be found the most suitable exercise. It should not be taken directly after meals, and it should not be pushed to the point of fatigue—to avoid this it must be very gradually increased.

It will be seen, then, that it is not a question as to whether rest or exercise is indicated in the treatment of tuberculosis, but rather the amount of each to be prescribed and the period in the disease at which these measures should be employed.

To make a return to work feasible, then, the endurance of the patient must first be built up. Here is the function of exercise: to accustom one to gradually increased efforts without ill effects. It is only when the patient is able to stand several hours of walking or other form of exercise without harm that we are justified in feeling that his is an arrested case.

The rest cure not followed by graduated exercise is worse than nothing. Every patient should be kept under the care of a physician until the sum total of his exercise will exceed the sum total of his exertion afterwards. This is one of the most important points among the ordinary regime. Part rest cure without subsequent exercise in a patient reaching a satisfactory result is worse than no rest cure at all. Let us be sure and work them back until the sum total of exercise exceeds the sum total of the exercise they expect to undergo in their return to their home or activities.

In closing I wish to state that I have never known rest, no matter how prolonged, to do any harm, while exercise brings more tuberculous patients to grief than all other things combined.

#### DISCUSSION

**Dr. O. T. HYDE, Albuquerque:** I want to congratulate Dr. Murphey on his paper in which he has gone very exhaustively into the subject of rest and exercise. I want to congratulate him on his choice of subject, because I think that rest and exercise are absolutely the only therapeutic measures upon which workers with tuberculosis are absolutely agreed.

The only trouble about rest and exercise is the problem of the amount of each. As Dr. Murphey has suggested, a few years ago the pendulum swung to the side of exercise. Now it is a question in my mind, at least, if the pendulum has not swung a little too far to the side of the rest in the minds of some doctors and also some patients. There is a great doubt in my mind whether some patients are not kept flat upon their backs, though absolutely afebrile, who would not do much better under exercise.

One trouble that we in sanatoria have is the fact that we do not deal with things as we want to deal with them, but as we have to deal with them. The time that the average patient ought to give, compared with the time that the average patient can give, very often does not coincide. For economic reasons, the patient leaves, and we will find years after that the patient is still living in some boarding-house following the idea of rest. As Dr. Magill says, "the stall-fed hypochondriac is of no value to the world whatsoever." They have become so imbued with the idea of rest from the doctors in the sanatorium, that they think it is the whole thing and keep it up long after they need exercise. As Dr. Biggs says, "What good do we do when we convert a sick working man into a healthy loafer?" I am afraid that occurs too often.

But getting down to the theoretical side, I think the great point is, what is activity? And the moment we start that question in this meeting, we have started something. Personally, I do not think it is correct to place the preponderance of evidence on the physical signs; I think it should be on the subjective side as well as the history. I personally feel that a fresh case of tuberculosis with no fibroid barriers established ought to be kept most carefully at rest, no matter whether he is febrile or afebrile; and that some of the old, chronic cases, who have tremendous fibrosis and still run a little temperature, will do much better up than they will do down. In fact, in this town there are many men, known to all of us, who occasionally have a high temperature, 102 or 103, yet are working and have been working as much as the average man works for a period of years. These men have some economic utility and I think that if instead of using the word "cure" in our consideration of cases, we would accentuate the idea of economic utility we would do better. I personally feel that a great number of our cases are of some standing in economic utility. If a man is only 20 per cent efficient but you get him where he can use that 20 per cent, you have done something for him and for society too.

As to the subjective symptoms, I think too much accent is placed on the temperature. I believe that the pulse and the condition of the heart especially, using as a guide findings before eating and before exercise and after exercise and after eating, are of tremendous value.

I enjoyed the paper very much.

**DR. DAVID C. TWICHELL, Albuquerque:** I thank Dr. Murphey for his paper.

Personally, I consider that Dr. Hyde has brought up one of the most interesting points in the tuberculosis problem. A great many of you here are sanatorium men. I am not a sanatorium man—that is, I am not identified directly with a sanatorium, though I have been in the past, but, as I say, I think Dr. Hyde has brought up a most extremely interesting point in the problem in the question of after the sanatorium in the clinical handling of a case of tuberculosis. A mental picture of a case which it seems to me is well to keep in mind, and which I try to keep in mind, is dividing it into three parts. First, is diagnosis; second, is sanatorium treatment; and the third is the period of return to normal life. This third period is proving itself the most interesting to me personally.

The question of diagnosis is largely settled for us in the cities. We have not very much to do with the question of diagnosis. As to the second, sanatorium treatment, I believe that rest cannot be overdone. Of course, I was brought up in the extreme school, at Saranac Lake under Dr. Brown, who certainly was the first in this country to emphasize the extreme value of rest, and, as I said, I do not believe that rest can be overdone in the sanatorium. In fact, I think the chance should be taken in the sanatorium of overdoing rest. In the same way, I feel that in this third period of return to normal life, the chance should be taken of over exercise. It is a very difficult field, I think, this third period, of return to normal life, but it seems to me vastly important, as Dr. Hyde said, because of the economic value of the individual.

**DR. J. W. LAWS, Lincoln:** I have not much to add to what Dr. Murphey has given us in his paper, except to say that I do feel that a great deal of judgment is required in the handling of tuberculous patients as to how much and how long they shall be required to rest and then as to how much exercise, when they do begin, they are able to stand. When it comes to deciding a question of that kind, we have to individualize each patient and rather feel our way along according to the results that we get. I read Patterson's excellent work on "Rest and Exercise," and it sounded mighty good, the way it was formulated as to how it could be carried out; but when you come to carrying out your ideas of rest and exercise you find that you have to vary a great deal from Patterson's scheme as outlined by him.

It takes a great deal of careful judgment and a very optimistic view of the future oftentimes to determine what is best for a patient that you have resting and who still continues to run temperature and continues to have toxemia. I remember one case, if I may report it, of a doctor's father. This physician had had experience in tuberculosis work himself for two or three years, possibly four years, in this southwestern country. Later on, when he went east, his father developed tuberculosis and was sent west. This gentleman ran a temperature steadily for over one year. It was very discouraging. His son wrote me asking whether or not I thought that the altitude, which was about 5,000 feet, was too much for a man of his age, and whether or not he would not be better at a lower altitude. I replied that I felt I wanted him to do what was best for the patient, but I believed that it was the amount of involvement, the character of infection that we had to deal with, rather than the altitude. After this gentleman had remained in bed for over a year, something like fourteen months, his temperature began to drop. He began to want to sit up, after his temperature returned to normal. He was allowed to be up for a little while, and we found that his temperature was popping up a little too much, there was a tendency to cough a little more than we thought that he should; his appetite was not quite as good. He had to be put back to bed for a period of time again, and the next time the interval of being up was longer. We increased the dose of exercise gradually. This old gentleman, seeing that he was gaining, that his appetite was improving and his weight was increasing, became very much interested in the game; and in about one year and a half he had gone beyond his former normal weight and was able to walk considerable distances, returned to the city, Washington, D. C., and is living there today. I cite this case simply to show how difficult it is at times to judge when you are doing what is best for your patient and to have the optimism to continue the fight with rest and exercise and with hygienic measures (applause).



**DR. J. A. REIDY, Albuquerque:** I would like to ask Dr. Twichell if when he spoke of the exercise not being overdone he would mean that as being applicable to cases who stay in a sanatorium until they are considered cured; or whether that would apply to cases who left the sanatoria because they thought they could not stay longer, for various reasons.

**DR. DAVID C. TWICHELL, Albuquerque:** That is a rather difficult question to answer. You have to individualize. I do not know that I could answer in a general way a general question like that. It is rather difficult to meet. It is very largely a question of individualization.

**DR. J. B. MCKNIGHT, Carlsbad, N. M.:** I do not wish to take up any more time in the discussion of this subject. I only wish to thank Dr. Murphey for this paper, which I consider the best paper on the most important subject that will be offered at this meeting. We are all agreed that rest, with proper climatic conditions, proper feeding and exercise, are the large factors in the treatment and beneficial results of treatment in tuberculosis. The question is a great one, especially just how much exercise and how much rest. As I have said, I wish to thank Dr. Murphey for his excellent paper on the most important subject connected with this medical meeting.

**DR. O. T. HYDE, Albuquerque:** Dr. Flynn is here, and he has done more work than almost any man in the Southwest in this line.

**DR. JOHN W. FLYNN, Prescott, Arizona:** If you ladies and gentlemen were not as familiar as you are with my optimistic friend to my right, I would feel like apologizing for the introduction he has given me.

I quite agree with the paper, and it is most pleasing to notice the advance that there has been in what seems to me general medical opinion in this subject in the last few years. I have only one suggestion to offer, and that is this: It has been pointed out, and correctly so, that there are a number of cases in which it is very difficult to determine the kind and the amount of exercise best suited to the case. I wish to suggest that possibly there is room for heliotherapy. I have come to look upon sun treatment as a form of exercise, and I am coming to believe that there is a real place of usefulness for it in what might be called borderline cases, so far as rest and exercise are concerned. These cases who have apparently done well under rest, who do not do well at all on even the most carefully graduated form of muscular exercise, sometimes, I believe, do well under carefully graduated heliotherapy, and I am coming to believe, as I say, that there is a field of usefulness for heliotherapy in this class of cases.

**DR. MURPHEY, closing:** I have nothing more to add. I wish to thank the doctors for the interest they have shown in the paper.

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## AN INTERPRETATION OF GHON'S WORK.

BY

E. S. BULLOCK, M. D., Silver City, New Mexico.

(Read before the 3rd Annual Meeting of the Medical and Surgical Association of the Southwest, El Paso, Texas, December 8th, 1916.)

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I have heard the statement rather frequently of late years that most of the work now done in tuberculosis is negative in character. I cannot admit this, but believe that every step forward in accurate knowledge is one toward the final solution of the tuberculosis problem. Such is Ghon's work, which I think settles conclusively one or two points about which there has been endless discussion heretofore. In this paper I can make no claim for originality, but come before you simply as an interpreter of this man's wonderful research, which strikes me as so important as to merit wider dissemination.



Every tuberculosis worker appreciates that there are multitudinous problems connected with the disease for which there has been as yet no solution. I remember writing to Doctor Trudeau asking him why a tuberculous subject could present large excavations and never have had any cough and expectoration, and he replied: "There are many things about tuberculosis which we do not understand." Such are stumbling blocks to clear thinking, and, therefore, we should be more than grateful to Prof. Ghon for so adequately clarifying one part of this difficult subject.

Way back in 1876, Parrot, of Paris, stated that for every tuberculous affection of a tracheo-bronchial gland there would be a similar one in the lung. He and his pupil Hervouet were always able to associate the two lesions in their numerous post mortem studies on children. He said further that the tracheo-bronchial glands were the mirrors of the lung. The elaborate studies of G. Kuss, reported in 1898, confirmed the so-called law of Parrot, as did those of E. Albrecht in 1907. The latter laid down the rule that in each case of tuberculosis of the bronchial lymphatic glands the corresponding tubercle in the lung should be sought for. H. Albrecht in 1909 from the study of 1060 children dying of tuberculosis confirmed the previous work as well as Parrot's law, and stated that the site of the primary infection is always in the smallest lymphatic glands of the bronchi, and corresponding to the lung focus. On the same side will be found caseous tracheo-bronchial glands, and show more advanced lesions than the other side. In view of the fact that he always found the oldest anatomical lesion in the lung, and never in the glands, he concludes that there can be no such thing as a retrograde infection from the glands to the lung. At the same time that he made this statement he added that the primary focus of tuberculosis in childhood is always aerogenous, and never hematogenous. Foedisch, in 1910, further confirmed these observations, as have several others, notably, A. Sigg, Naegeli, Winkler, Most and Ponfick.

If all this work has been done, and practically the same conclusion reached by these various workers it is reasonable to inquire, "why do more?" Prof. Ghon replies simply by saying: "It is because by this means I am hoping for a wider recognition of the primary lung focus of the tuberculosis of childhood." In elucidating the primary focus, studies of the bodies of adults are not very helpful, as the original focus is likely to be totally obscured by later changes, and for this reason investigators have chosen to do this work upon the bodies of children, dying from all sorts of diseases, and in which should tuberculosis exist the primary focus can be demonstrated, as it is less likely to be obscured by advanced tuberculous changes. When so recent a work as that of Fishberg completely ignores the studies of Kuss, Parrot, Albrecht, and Ghon in the matter of the initial lesion, and states what is not so, viz, that "it is very difficult to positively decide which was the initial lesion," there seems plenty of room for further profitable discussion of the question, especially as there are many worthy workers who insist that tuberculosis is first implanted in the glands,

and reaches the lungs by way of the lymphatics. Among such are notably Andvord, Ranke, Froebeli, Debesche, Ungermann, Beitzke, and I think our own Col. Bushnell is an advocate of this theory. The reason why these men failed to demonstrate the initial lung lesion when tuberculosis was found in the glands is to be found in failure to search carefully enough. Even Ghon did not at once acquire the skill needed in their demonstration, but "only after he had taken a good deal of time to become expert in the most accurate method of detecting the primary focus." His work and deductions are based upon 184 cases of tuberculosis from St. Anne's Children's Hospital in Vienna, and these wonderfully careful post-mortems were all done by himself. The post-mortem demonstration of tuberculosis does not mean it to be a necessary cause of death; for death from many diverse causes is found among these cases.

Ghon divided his cases into two principal groups, those with a primary lung focus, and those without. I have already emphasized the wonderful care and thoroughness with which his work was done; in fact I believe that all who have studied his book are convinced that greater care could not have been used. Experience soon taught him that the easiest way of finding the lung focus lay in demonstrating the tuberculous glands, and judging, usually correctly, that the focus would be in that portion of the lung which the glands drained. It should be understood that his work is based upon anatomical and macroscopical evidence alone. In the first group, that is, cases of tuberculosis showing a primary lung focus, there were 170 cases, or 92.4 per cent of the total number. There were 14 cases in the group in which a primary lung focus could not be demonstrated, or 7.6 per cent of the whole number. Considering first the cases with a primary lung focus, he found it necessary to divide these cases into several groups, depending upon the tuberculous lesions in other organs and the seemingly distinct dependence of such lesions upon the primary lung focus, from the point of view of their age, which he states can easily be done.

In a paper like this, it is impossible to give more than one example of each group, but to fix the matter in mind, and fairly interpret another man's work it is necessary to give one protocol for each group.

1. Cases of lung focus without other tuberculous changes.

P. M. 556: Female, aged 51½ years. An old abscess, the size of a small apple, in the left temporal lobe, with surrounding pachymeningitis interna of the left central cranial fossa. Suppurative otitis media on both sides. Acute enteritis of the small intestine. Scars on the skin in the region of the first phalanx of the right middle finger, and an oblique radiating scar on the skin of the right elbow. Two caseous tubercles, the size of peas, about the middle of the medial surface of the left upper lobe, and a similar one in the middle of the anterior surface of the right upper lobe, all three foci being situated subpleurally. Partial adhesive pleuritis of the base of both lower lobes. The lymphatic glands adjoining the lungs, as well as

all the others of the body, and all other organs, were macroscopically free from tuberculosis.

This case should be carefully kept in mind; for of the whole series, it is the only one of its kind in which the lung focus was not accompanied by glandular changes, or tuberculosis in other organs.

2. Cases with lung focus and tuberculous changes in adjoining lymphatic glands. There were thirty-four cases in this group, and they were divided into two classes, namely one in which there were no signs of anatomical healing, and one in which evidence of healing was demonstrable. There were five cases in the first class of which the following is an example:

P. M. No. 310: Female, aged 21 months. Recurring warty endocarditis of the mitral valve, with valvular insufficiency, and with stenosis of the left venous ostium. Eccentric hypertrophy of the heart. Organs congested. Croupous pneumonia of the left lower lobe. Sero-fibrino-suppurative pericarditis and pleuritis of both sides. A caseous tubercle, the size of a cherry stone, in the middle of the anterior surface of the left lower lobe. Total caseation of the lymphatic glands where the left main bronchus divides, and partial caseation of the left lower tracheo-bronchial lymphatic glands. All other lymphatic glands of the body and all the other organs macroscopically free from tuberculosis.

In regard to this case it should be kept in mind that you find the lung focus, and caseation of the glands on that side.

Of the cases with evidence of anatomical healing there were thirteen, of which the following is an example:

P. M. No. 631: Male, aged four years. Acute pharyngitis and tonsillitis, with acute inflammation of the glands of the neck along with scarlet fever. A shriveled cavity, the size of a cherry stone, with calcified contents and hardened wall in the middle of the posterior surface of the right lower lobe, with scarred contraction of the surface above the cavity. Caseation and calcification of the broncho-pulmonary lymphatic glands adjoining the right lower lobe on the right side; partial calcification of the lower end of a lower tracheo-bronchial gland on the right; small caseous tubercles in an upper tracheo-bronchial gland on the right. Partial adhesive basal and interlobular pleuritis of the right side. All the other lymphatic glands of the body and the other organs macroscopically free from tuberculosis.

Now the important points to keep in mind regarding this case are the pulmonary focus, the involved glands on the same side, the evidence of healing, and finally keep in mind that in none of these thirteen cases was healing complete. Of course, the comments made upon a typical case apply to all others of the same class. It should also be kept in mind that outside the lungs and chest glands there was no other tuberculosis.



We now come to the third group; those in which there was a lung focus, tuberculous changes in the adjoining lymphatic glands, and hemato-tuberculosis in other organs. There were twenty cases of this kind, that is, out of the 170 cases with a lung focus there were twenty like the following:

P. M. No. 354: Male, aged 9 years. Acute tuberculous basal leptomeningitis. Scattered acute miliary tubercles in both lungs, in the liver and spleen. A caseous subpleural tubercle, the size of a pea, in the middle of the basal surface of the right lower lobe. Total caseation of the broncho-pulmonary lymphatic glands along the main bronchus of the right lower lobe. Partial caseation of the lower tracheo-bronchial, and some upper tracheo-bronchial lymphatic glands on the right. All other lymphatic glands of the body, and all other organs macroscopically free from tuberculosis.

You will notice that this case is like the others except that it does not give evidence of anatomical healing, and of the twenty cases of this character there were ten without anatomical healing, and that there is tuberculosis outside the chest. There were of course ten with evidence of healing and of them the following is an example:

P. M. No. 498: Male, aged 21 months. Pseudo-membranous tracheitis and bronchitis. Decubital ulcer of the right vocal cord. Lobular pneumonia of the right lung. A caseous indurated tubercle, larger than a pea, in the middle of the anterior area of the left upper lobe, directly under the surface, with acute miliary tubercles in the surrounding area. Caseation of the broncho-pulmonary lymphatic glands adjoining the left upper lobe, and of some of the tracheo-bronchial ones on the left. Adhesive tuberculous pleurisy of the medial surface of the left upper lobe. Scattered acute miliary tubercles of the spleen, and a fair number in the liver. All other lymphatic glands of the body and the other organs macroscopically free from tuberculosis.

We now pass to the fourth grand division of the original 170 cases; that is, cases with a lung focus, with tuberculous changes in adjoining lymphatic glands, hemato-tuberculosis in other organs, and in addition with tuberculosis of those lymphatic glands, the tributary organs of which may come under the head of channels of infection. It is important right here to emphasize that in cases of this kind of which an example will be given, "that the changes in these glands were certainly more recent than the primary lung focus with the accompanying changes in the adjoining lymph glands, and also showed no tuberculosis in those organs which came under the head of possible channels of infection." In this subdivision there were twenty-five cases; that is 13.59 per cent of all the cases. As before, these cases are further divided into those with and without anatomical healing, either partial or complete. Of this group five cases showed tuberculous changes in the cervical lymphatic glands, of which the following is an example:



P. M. No. 322: Female, aged 3 years. Tuberculous basal leptomeningitis. Acute miliary tubercles in both lungs, spleen, liver, and kidneys. Tubercles the size of lentils on the lower surface of the diaphragm. A caseous tubercle the size of a hazel nut, on the anterior surface of the left lower lobe near its anterior and lower border. Total caseation of the broncho-pulmonary lymphatic glands adjoining the left lower lobe, and of the lower tracheo-bronchial ones, also of some isolated paratracheal lymphatic glands on the right, and of the posterior mediastinal ones. Acute miliary tubercles in the bronchial pulmonary glands on the right. Acute miliary tubercles in the deep medial lymphatic glands of the neck on both sides.

The following is an example of cases with tuberculous changes in the mesenteric lymphatic glands:

P. M. No. 413: Female, aged 15 months. Tuberculous leptomeningitis of the base and in a less degree, of the convexity. Acute miliary tubercles in the lungs, liver, spleen and kidneys. Three cavities, the size of cherry stones, at the apex of the left upper lobe, situated immediately beside one another. Total caseation of the upper tracheo-bronchial lymphatic glands on the left, partial caseation of the upper tracheo-bronchial ones on the right, and of the lower tracheo-bronchial ones, as well as of some of the anterior mediastinal lymphatic glands. Adhesive pleuritis of the medial surface of the left upper lobe. Acute and subacute miliary tubercles in some mesenteric lymphatic glands.

In the group just exemplified, the thing that stands out is the fact that outside the chest there was tuberculosis of glands, such as mesentery and cervical, in which tuberculosis was not demonstrable in the tributary organs which could be considered as channels of infection. Now in the next group (5), corresponding in all other particulars with the previous one, such tuberculous changes in other organs tributary to the affected glands could be demonstrated. This is the largest group and has in it 64 cases, or 34.79 per cent. They also can be subdivided as previously, but it becomes necessary to make a couple of additional divisions. Here is an example of cases with tuberculosis of the mesenteric lymphatic glands and their tributary organs; and in which there were anatomical signs of healing.

P. M. No. 843: Male, aged 19 months. Tuberculous basal leptomeningitis. Scattered acute miliary tubercles in the spleen and kidneys, abundant ones in the liver. A caseous tubercle, the size of a pea, in the upper lobe of the right lung near its lateral border, just below the apex and immediately under the surface, with acute miliary tubercles in the surrounding area, and partial adhesive pleuritis of the upper lobe in this region. Total caseation with partial softening, of the broncho-pulmonary glands adjoining the right upper lobe, and of the upper tracheo-bronchial glands on the right. Acute miliary tubercles of the lower tracheo-bronchial, and of some of the anterior mediastinal lymphatic glands on the right. A miliary tuberculous focus in a fold of the lowest part of the ilium. Single

acute miliary tubercles in some of the lymphatic glands adjoining the iliocaecal valve.

In the next grand division (6) of the original 170 cases we have the same old lung focus which should not be forgotten for a moment; also the tuberculous changes in adjacent lymphatic glands, with or without hemato-tuberculosis in other organs, and with more recent, but far more advanced tuberculosis in those organs which may be considered as channels of infection. In these cases as in the others there could be no anatomical question but that the lung focus was the oldest lesion, and except for the more advanced lesions they could have been placed with the previous division. The following is an example:

P. M. No. 908: Male, aged 16 months. Tuberculous basal leptomeningitis. A caseous tubercle, the size of a bean, on the medial surface of the right occipital lobe, with subacute tuberculous leptomeningitis, and encephalitis on the middle surface of the right cerebral hemisphere. A caseous tubercle the size of a pea on the lower surface of the right cerebellar hemisphere. Acute miliary tubercles in the liver, kidneys, thyroid gland, both lungs, and in the periaortic and inguinal lymphatic glands of both sides. Acute and subacute miliary tubercles, together with some tuberculous infarcts in the spleen. Tuberculous, caseous, partially adhesive pericarditis. Circumscribed tuberculous peritonitis, on the lower surface of the diaphragm. A softened caseous focus, almost as large as a hazel nut, in the middle of the interlobar surface of the left upper lobe, with circumscribed interlobar adhesive pleuritis. Acute miliary tubercles in both lungs, partly caseous in the center. Total caseation of the broncho-pulmonary lymphatic glands, adjacent to the left upper lobe, and of the upper tracheo-bronchial ones on the left. Acute miliary tubercles in the broncho-pulmonary lymphatic glands adjacent to the left lower lobe. Total and a partial caseation of the lower tracheo-bronchial glands on the left, and of the anterior mediastinal ones. Total caseation of the paratracheal glands on the left, and partial caseation of the same on the right. Extensive ulcerative tuberculosis of the pharyngeal tonsil. Caseous tubercles as large as beans in the deep medial cervical glands of both sides. Tubercles, caseous in the center, the size of millet seeds, in the layers of the small intestine. Similar tubercles in the mesenteric and portal lymphatic glands, and acute miliary tubercles in the peri-pancreatic glands.

In the next and last division (7) we have the same general conditions, such as lung focus, adjacent lymphatic glands, with or without hemato-tuberculosis of other organs, with tuberculosis of those organs which may be considered as channels of infection, but the important difference that the lung focus is of the same apparent age as the tuberculosis of organs which may be considered as channels of infection. The cases in this group were fifteen in number or eight per cent of the total 170. The following is a typical example:

P. M. No. 851: Male, aged 8½ years. Tuberculous basal leptomeningitis. A caseous tubercle the size of a pea in the posterior medial area of the left optic thalamus. Acute miliary tubercles in both lungs, but most numerous and situated closest together at the apices of both upper lobes, in the liver and somewhat more scattered in the kidneys. A smooth walled cavity larger than a bean, with calcified masses on the posterior surfaces of the right upper lobe near its posterior border, and just below the apex. Caseation and calcification of some broncho-pulmonary lymphatic glands, adjoining the right upper lobe, and of some upper tracheo-bronchial ones on the right. Adhesive pleuritis of the upper and middle lobes of the right lung, and circumscribed of the lingula of the left upper lobe. Adhesive pericarditis. Numerous tuberculous ulcers larger than lentils, mostly of a gray color, together with some caseous tubercles the size of hemp seeds in the small intestine, especially in the lower ileum. A small tuberculous ulcer in the ascending colon. Partly calcified tubercles ranging to the size of millet seeds in several mesenteric lymphatic glands. Acute and partly caseous tubercles in the pharyngeal tonsil. Tubercles as large as millet seeds, but not sharply defined in the deep medial cervical lymphatic glands of both sides.

For the moment I desire to recapitulate, that we may fix this matter in mind. First we had the case with the lung focus alone, of which there was but one. Evidently this is a very small class and shows definitely the difficulty of finding lesions so recent as to be unaccompanied by macroscopic changes in any other part of the body. Next we find the cases with the lung focus and changes in the adjoining glands. There were quite a number of these, 18 per cent in fact, showing that very soon after the establishment of the initial lesion there is involvement of the glands. Next we have the cases, 10 per cent of the total number, in which we have hemato-tuberculosis in other organs, showing that tuberculosis needs but be established in the lungs but a comparatively short period before there is a substantial chance that it will be carried by the blood to other organs. In the next class we add to the usual findings tuberculosis of those lymphatic glands, the tributary organs of which come under the head of channels of infection; but let us remember, there was no difficulty in determining that the lung focus was the older lesion. The last named was quite a group, and makes 13 per cent of all the cases. In the next group there may or may not be hemato-tuberculosis of other organs, but, was definite tuberculosis, more recent than the lung lesion of organs which come under the head of channels of infection. This is the largest group, 34 per cent of all the cases, and establishes the fact that in most post-mortems on children the tuberculosis present, regardless of cause of death, will already have made extensive progress in the body, apparently secondary to the lung focus. The next class which makes but 5 per cent of the cases, differs from the previous only in the fact that the secondary tuberculosis of other organs was far more advanced, and except for that fact could have been correctly



placed in the previous class. The last class, which makes 8 per cent of all the cases, is very interesting, and could be classed with the two previous except for the important point that anatomical and macroscopic evidence could not show that the tuberculosis of other organs was of any different age than the lung focus. In other words in but 8 per cent was it impossible to say definitely that the lung focus was not the oldest lesion. We have already gone far enough to show the falsity of Fishberg's statement, which is only true in the case of adults dying of tuberculosis, in which the changes are so vast as to obscure everything regarding origin.

The majority of Ghon's cases showed but one primary lung focus, but in quite a percentage there was more than one and it was, of course, not possible to always say which was the older. In this connection we must consider the possibility of simultaneous implantation, and the possibility of reinfection, as pointed out by Hamburger as late as 1911. It must not be forgotten that when it proved impossible to decide which lesion was the older or oldest, that one of them might have been the oldest, even though macroscopically they appeared exactly alike.

I am well aware of the fact that nothing can be more stupid than listening to the reading of protocols, which require the concentration of one's study for the extraction of their meat, and I am appreciative of your patience, but, permit me to emphasize, in no other way can Ghon's argument be presented. Its further elaboration requires that attention be paid to the appearance and size of the lung focus. Fifty-two cases of those with one lung focus showed caseation, and in twenty-one of these there were surrounding tubercles manifestly dependent upon the lung focus, and the sizes of these surrounding tubercles were proportionate to the lung focus. In fifty-one of the cases with one lung focus there was a cavity. In fifteen of the cavity cases there were surrounding tubercles. In thirty-four cases there was calcification of the lung focus. In five of the 142 cases with one lung focus there was nothing but a scar to show the original lesion. In the remaining cases with more than one lung focus caseation, cavitation, calcification, petrification, and mixtures of these with scarring were all represented. The larger half of the cases showed progressive types of disease, and the smaller half gave evidence of healing, partial in most and complete in a few. Among the cases a very small sized lesion predominates. The cavity cases showed the largest lesions. You have probably already observed that the children were very young as a rule. The oldest was but fourteen, and most were much younger than that. This fact is of importance; for the younger the children the more significant the work becomes. Ghon's cases also show that the younger the child the less likely will healing be found, and per contra, the older the child the more often is evidence of healing presented, and the more extensive progression as well.

In 142 cases with one lung focus there was evidence of diseased pleura in ninety-five. In twenty-eight cases with more than one lung focus there was disease of the pleura in nineteen. In other words 67 per cent



of all the cases showed pleuritic changes. In more than one-fifth of the cases the pleuritic changes were right next to the lung focus; in one-quarter the lung focus was in the neighborhood of the pleuritic changes, and in a larger number on the same side as such changes; in 75 per cent the pleural changes were only on the side of the lung focus, and in almost half the pleuritic adhesions were over the lobe in which the focus was found. After doing this work for some time Prof. Ghon discovered that the easiest way of locating the lung focus was to search under the adhesions. He was also aided by the fact that the pleura would be adherent to the glands nearest the lesion, particularly the upper tracheo-bronchial. A contraction in the lung just over the focus also aids in their discovery.

The right lung was more frequently attacked than the left; in the proportion of two to three. One lung was usually affected, and in most cases but one lobe of one lung. The right upper lobe predominated; next the left upper, and finally the lower lobes in about equal proportion. The majority of foci were on the anterior surface of the right upper lobe, and the same was true of the opposite lobe when it was affected. On both sides the middle of the anterior surface is the favored spot for the development of tuberculosis. When the lower lobes are diseased it is their posterior lower surface most often. In about half the cases the lesion was sub-pleural. Ghon is of the opinion that the primary focus is formed around a very small bronchus focus in the peribronchial glands, and he states that a bronchus can almost always be traced into the focus.

It now becomes important to recall Parrot's law with which Ghon's work is in complete agreement, to the effect that if you find a lung focus inevitably tuberculous changes will be found in the glands draining the focus. They are never absent from the side of the lung focus, and mostly only on the side of the focus. Ghon deduces from his almost innumerable cases the law that "changes in the lymphatic glands adjoining the lungs, accompanied by one or several so-called primary lung foci, are topographically subservient to certain laws which entirely correspond to those which under normal conditions hold good for the discharge of lymph from certain parts of the lungs. This fact is of fundamental importance; in itself it proves that the so-called lung focus never can have originated in a retrograde manner." Now if we are to grasp the relationship between lung focus and adjoining lymphatic glands, which is of first importance in the development of this argument, it must be understood that in all Ghon's cases he never saw one in which the changes in the glands by any stretch of the imagination could be conceived as older than those in the focus; certainly if the gland changes were older than the lung focus such a fact could be demonstrated, and the fact that no observer has found such a condition proves that the gland tuberculosis is always secondary to the lung focus.

In none of his cases was Prof. Ghon able to trace any connection between, for instance, a lesion of the ribs and the lung focus; therefore if a

lymphogenous origin is to be attributed to the lung focus, such could only arise from the tracheo-bronchial or broncho-pulmonary glands. Many investigators agree that under certain conditions such a retrograde infection might be possible, but Ghon's researches indicate that the lung focus is the older or oldest lesion. Injections of the pulmonary lymphatic system show that the glands in question are supplied by a centripetal flow, and that in the median line there are anastomoses from one side to the other. Ghon also notes that he has often been able to trace a fan-like spreading out of the glandular involvement from the lung focus; that is the hilus of the fan corresponds with the lung focus, and that never did he see such a spreading out in the opposite direction. The objection has been raised that the glandular changes are usually more extensive than those in the lung in his cases. He replies that in a progressive disease such as this, in which the focus acts as a constant source of supply for the glands, it could not be otherwise. In fact he feels so sure of his ground that in the fourteen cases in which tuberculosis could not be demonstrated in the lungs, only fourteen in 184, that he is inclined to think that even with great care the pulmonary focus had been overlooked.

Having so disposed of the retrograde lymphogenous infection, the next to be considered is the hematogenous. This theory presupposes that the infective material must have entered the body without having left a demonstrable local focus, or the focus must be in some other part of the body outside the lungs; that is, the lung focus must be regarded as metastatic, but in such a case the so-called primary focus outside the chest could not possibly be younger than the lung focus, and as a matter of fact in no case could Ghon find a lesion outside the chest which was older than the lung focus. Bartel, Weichselbaum, Harbitz, and Gaffky have all called attention to certain non-specific glandular changes in children, which might be a source of later tuberculosis, in fact such findings of bacilli in glands are called Bartel's stage of lymphoid latency, and even Ghon admits that the possibility of infection of this type must be granted, but states that if it occurs it must be very exceptional; for it completely violates the law of primary effect as laid down by V. Baumgarten, and that of localization as given by Cornet, V. Baumgarten and Tangl. Therefore, few men have had the temerity to support it. In this connection it becomes very important to point out that in the most extensive post-mortem researches at St. Anne's Hospital, in Vienna, the results of the tuberculin test are in complete agreement with the post-mortem findings; that is in every case in which the test was positive before death they were able to demonstrate the tuberculosis post-mortem, and also whenever the test was negative, the post-mortem findings were negative. This certainly goes to show that Bartel's stage of lymphoid latency is a figment of the imagination. As regards infection we may therefore grant the theoretic possibility of a hematogenous metastatic formation of a lung focus in children without

harming the argument against it; for the proof of it is conspicuous by its absence.

Having excluded both the lymphatic and hematogenous origin of tuberculosis we arrive of necessity at the only remaining possibility, namely the aerogenous. Orth and others admit that histologically no one has ever been able to prove the impossibility or even improbability of the aerogenous implantation, and its possibility is denied by no one. From experiments upon animals we know that the lung is especially prone to infection. Ghon's entire researches show, as do those of both Albrechts and Kuss, that the primary focus, even though very small can be demonstrated in children. Their combined cases are too many and too carefully worked out to permit anyone to ignore them, and thus we can only conclude with them that the original implantation is almost always pulmonary, aerogenous, and from the lungs reaches the glands and affects them secondarily, and that Parrot, back in 1876, knew exactly what he was talking about.

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## PERFORATING ULCERS OF THE STOMACH AND DUODENUM WITH REPORT OF CASES

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BY

DR. F. D. GARRETT, El Paso, Texas

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### *Frequency:*

Reports as to the frequency with which stomach and duodenal ulcers perforate depends a good deal as to whether surgical or medical clinics are making observations, percentage being decidedly higher in the surgical service than the medical, because surgery has to deal with more advanced cases. According to Bassler it occurs early or late in about 5 per cent of all ulcer cases. An average of the percentage from various sources is given by the same author at from 3.2 to 22 per cent. According to Robson, 50 per cent of all duodenal ulcers perforate sooner or later. I think a much lower percentage would be more correct, probably about 10 per cent. Certainly the duodenal type of ulcer perforates more frequently than stomach ulcer.

### *Location:*

Brinton's statistics give 70 per cent of cases of perforation as occurring on the anterior wall, 21 per cent on the lesser curvature, and 9 per cent on the posterior wall.

Nearly all perforations of the duodenum affect the anterior wall. In Moynihan's cases only 3 per cent were on the posterior wall.



*Anatomy:*

Ulcers on the anterior surface of both stomach and duodenum when perforated open into the greater peritoneal cavity. Those of the lesser curvature of the stomach into the lesser peritoneal cavity; and those of the posterior wall of the stomach and duodenum open into the cellular tissue behind, and the resulting infections tend to follow the ascending colon toward the left kidney space. Infection of the lower peritoneal cavity leads to sub-phrenic abscess, and in rare instances to pneumo-pericarditis, pneumo-thorax, pyo-pneumothorax, or involvement of the mediastinum with external emphysema (Bassler). From perforation into the lesser peritoneal cavity encapsulated sub-phrenic abscess (with or without rupture into the chest cavity), abscess of the kidney, fistula into the colon, portal vein, liver and pancreas have all been noted. Or an infective sinus may travel downward and point in the pelvic cavity or even in the thigh.

Perforation on the anterior wall of the stomach is the most serious of all, because the more infective nature of the contents, and the lack of protection from adjacent viscera, promotes the rapid spread of infective matter.

Owing to the anatomical situation of the duodenum, being placed between the right lobe of the liver and the gall bladder, and somewhat deeply, the contents do not as a rule escape into the abdominal cavity as in the case of perforation on the anterior wall of the stomach, but tend to travel along the posterior aspect of the hepatic colon, gravitating downward in front of the right kidney and then into the right iliac fossa. This line of infection may occur in the acute form of perforation, but is especially apt to be the case with perforation that are subacute (Moynihan).

*Symptoms:*

According to Lockwood, perforation occurs without warning in 5 per cent of cases. This may be due to the natural reticence of some patients, to the dulled sensorium of others. With the more intelligent class of patients it is nearly always possible to get a history of periods of indigestion in the past, and in most cases careful history taking will bring out a typical ulcer history.

Symptoms will depend on whether the perforation has occurred on the anterior or posterior surfaces. The infection being limited to the posterior cavity, the symptoms are not so violent and develop more slowly.

**CASE NO. 1:** I shall here report a case of perforation on the posterior surface of the duodenum, to bring out some essential points in symptomatology. Mr. H., age 32, weight 125, average weight 137.

Family history, negative. Came to El Paso on account of a slight tubercular infection five or six years ago. Beginning five years ago commenced having attacks of indigestion, coming on once or twice a year, and lasting two or three weeks. There have been two attacks during the last six months when symptoms were decided and of daily occurrence; and he has seldom gone longer than two or three days during this period without some distress.

He complains of distress in the epigastrium radiating into the chest, coming on one or two hours after eating. But for the past three days the distress has been more constant and crampy in character, and not so much relieved by eating.



Examination of the stomach contents showed absence of occult blood, a slight hyperacidity, and moderate gastrosuccorrhea both of the digesting and fasting stomach.

Examination of the stools gave reactions for occult blood. Temperature 99 2-5, and pulse 90.

There was a marked rigidity of an area about the size of the hand just above the umbilicus. This area was sensitive to pressure.

We felt sure of having to deal with a chronic duodenal ulcer. But on account of the relative acuteness of the condition present, I did not feel like putting him on medical treatment on account of the risk of perforation and told the patient so. At this stage Dr. Cathcart made some radiographs of Mr. H., after a barium meal. I wish to exhibit to you one of these pictures which shows you an ulcer literally caught in the act of perforating.

We advised operation with a diagnosis of perforating duodenal ulcer, which Drs. Brown found to be correct, the ulcer being in a rare location on the posterior wall. The closure of the ulcer done by Dr. Brown was followed by complete and uneventful recovery.

This was a case of the sub-acute type of perforation with mild symptoms, and might, if the history were overlooked, give rise to the most obscure symptoms depending upon the course the infection happened to take.

Mr. S.: Referred to me by Dr. J. L. McKnight with a diagnosis of probable duodenal ulcer. The patient was a strong laboring man who had always been well until three or four days before I saw him. He claimed to have always had very good digestion before that time.

My notes show that he complained of a marked heaviness in the left side in the neighborhood of the spleen at my first examination. He had considerable induration reaching from the inside of the left rectus muscle to the right of the median line, above the umbilicus. There was considerable tenderness to pressure within this area. Temperature and pulse were normal. On account of the threatening nature of the condition I decided not to use the stomach tube. We made a diagnosis of probable duodenal ulcer with localized peritoneal irritation. The patient was opposed to operative measures. He was put to bed, hot compresses were kept continuously over the gastric area and given a strict ulcer diet. After he had been in bed about a week, had no pain and seemed to be doing well, he got up and out of bed at night, walked into the kitchen to get his wife a drink and felt a sharp pain in the abdomen. This was later followed by more soreness and the pain continued in a lesser degree. I saw the patient the following afternoon, and thought he might have a perforation. But at that time his pulse and temperature were normal and he did not show the slightest evidence of shock. The patient was opposed to operation and his condition was so good, we consented to wait. Very small quantities of liquid nourishment were given him after twenty-four hours, and other treatment as before. Conditions remained about the same except rigidity and tenderness gradually extended to the right along the course of the transverse colon.

On the fifth day when Dr. Pickels and McKnight saw him with me, and being discouraged about his condition and progress, the patient agreed to have an operation, which was done by Drs. Pickels, McKnight and Stevens. A perforation was found, one inch below the pylorus in the anterior wall of the duodenum. This perforation was about the size of a dime, the duodenal contents had been carried as far as the right renal fossa. A careful toilet was made of the infected area, wiping with dry gauze, a good sized drain put in the right flank reaching the subrenal fossa; and a second drain put in the abdominal wound from the site of the perforation. The patient made a good recovery.

This second case, illustrated again that the symptom of perforation need not be so dramatic, but may run a sub-acute or chronic course.

### Now for the more dramatic, acute type.

(History taken five months before perforation): American, male, brunet, present weight 147, average weight some years before, 175. Family history negative. Had pneumonia at 20 and typhoid in 1911. Had had several bad falls from horses.

Patient began having stomach trouble fifteen years ago. During this period he had more or less indigestion, lasting a few weeks at a time and followed by periods of good health of from six months' to two years' duration. For the past two years he has counted his free periods in days rather than months.

Present complaint: Dull pain in the epigastrium, which becomes sharp one or two hours after eating, relieved by taking warm drinks, and feels best when lying on the back. He has excessive salivation, feels nauseated much of the time, diminished appetite, and sleeps poorly. Stomach contents showed increased acidity, but no occult blood. Marked six-hour retention, digestive succorhea. Occult blood in the stools.

A diagnosis of ulcer was made. The patient felt he could not quit work, and wished to see what could be done for him by ambulant medical treatment. This I agreed to with some misgivings. He was much relieved, and after a few weeks pyloric spasm almost entirely disappeared, he was free from pain and distress, and felt encouraged to believe he was getting well. Confidence having been restored in his stomach, he became more careless about his eating and I lost touch with him.

About five months after first consulting me, Mr. M. called me to his office about 11:30 a. m. I found him lying on his office desk suffering intensely with pain in the abdomen. Abdominal muscles board hard, respiration rapid and superficial. Temperature 97, pulse 120.

I gave  $\frac{1}{4}$  gr. morphine sulph. and 1-150 gr. atropin sulphate hypodermically, and sent him at once to Hotel Dieu, ordered the operating room put in readiness, and called Dr. Vance, who began operating at 1:30, by which time the patient had all the evidence of profound shock. A dime-sized perforation was found two inches above the pylorus, which had leaked a quantity of stomach contents into the peritoneal cavity. The patient's general condition was considered too bad for a gastro-enterostomy. Dr. Vance closed the ulcer with some difficulty on account of the friability of the tissue, making it necessary to pucker the tissue near the pylorus so much that we both felt that the outlet would be narrowed.

This patient after a somewhat prolonged and stormy convalescence made a complete recovery, and says now, after the lapse of three months, that he feels like a new man.

In the differential diagnosis of this last case I think the most difficult conditions to exclude would be: (1) appendicitis; (2) acute hemorrhagic pancreatitis; (3) perforation of the gall bladder; (4) acute intrathoracic disease.

(1) From appendicitis: onset of both perforation and appendicitis sudden; the early pain in both conditions is referred to the epigastrium, but later it is apt to be most marked at McBurney's point. The maximum rigidity is apt to be most marked at the site of the trouble in both. But this does not always help us because the rigidity may be so general and marked in both that there is no point of maximum intensity. As a rule, however, the rigidity in appendicitis is slight, compared to the intense board-like rigidity following perforation; the diaphragm is not so tightly held, and the breathing is not so short and jerky.

(2) Acute hemorrhagic pancreatitis: This condition is usually without previous history, save in cases where gall stones preceded the attack. Pain is felt in the epigastrium. The pulse is thin, weak and thready from the onset. Vomiting is a marked feature. Halsted has called attention to a deep lividity or cyanosis especially of the face in acute pancreatitis. General distension of the abdomen is said to be rare (Moynihan) in acute

pancreatitis, neither is the hurried, jerky respiration due to fixing of the diaphragm seen.

(3) Perforation of the gall bladder: Here the shock is not so intense and the reactions, both local and general, not so marked. Here again in the difficult cases, the history is of the utmost importance.

(4) Acute intra-thoracic disease; pleurisy, especially diaphragmatic pleurisy, may deceive the very elect. The onset may be sudden, the pain intense and felt only in the abdomen. There may be rigidity of the abdominal muscles, and a certain amount of tenderness also.

In intra-thoracic conditions the temperature tends to run higher, 103, to 104 or 105. In perforation the temperature may be subnormal at first, then goes up gradually and slowly to 100 or 101. With perforation the pulse tends to rapidity—120 to 140 and soon to 160. In respiratory conditions seen reasonably early we seldom find a pulse over 100. The respiration may be increased in both, but the ratio between the pulse and respiration usually shows a marked difference, being higher in perforation.

The treatment is known best to the surgeon. As an interest, I wish to stress the importance of early diagnosis, then a quick operation, quickly undertaken, and quickly done. Immediately after operation, if not sure that the stomach is empty, carefully lavage. Nothing by mouth the first 48 hours, but much glucose normal salt solution by proctoclysis. Then a somewhat modified ulcer diet until convalescence. And for a year after, a soft, bland diet. Surgeons too often make a mistake in telling such patients to eat what they please.

#### *Conclusions*

(1) The symptoms of perforation may be mild or severe according to the location and extent of the rupture.

(2) To take careful histories, to be open minded, and to be awake to *all* the possibilities, is necessary for the diagnosis of acute abdominal conditions.

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## REPORT OF SOME CASES OF FOCAL INFECTION WITH SPECIAL FEATURES

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BY

DR. H. H. STARK, El Paso, Texas

(Read before the El Paso County, Texas, Medical Society, March 5, 1917.)

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Owing to the anatomical peculiarities of the head, investigation along the line of focal infection in the last few years has thrown added responsibility on those men who have selected this part of the body to study and specialize on, for it is an every day occurrence that these specialists are



called on to act as the final judge as to whether infections of the ear, nose, throat or mouth are causing such diseases as nephritis, endocarditis, chorea and other nervous complications, iritis, etc. Unfortunately diagnostic methods have not kept up with the other investigations. With the tonsils we have practically the same method of diagnosis that we have used for years. The only difference is that a greater significance is placed on our findings. In diagnoses of the nasal sinuses, in addition to the old methods of probing and washing out, we have Roentgenography, but unfortunately improvement in the technique of this diagnostic method has not reached sufficient accuracy to be absolutely positive in all cases. With the teeth, however, it is much better. In addition to the difficulties of diagnosis, the question is always complicated by the fact that we may have focal infection in other parts of the body—the gastro-intestinal or genito-urinary tracts particularly. In addition to these difficulties, the condition may be complicated by systemic diseases, particularly syphilis and tuberculosis. So far the question is not fully settled as to whether the secondary involvement is due to infection or toxins and the split product of bacterial growth in the tissues. Clinically we have direct evidence in favor of each, and it may no doubt be due to either or both. To show the difficulties of determining from just where the infection comes, I will illustrate it by a case which came into my hands a few days ago.

**CASE NO. 1:** Girl, aged twelve, was referred to me with a dendritic ulcer of the right cornea. On investigating the case I found that she gave a history of not being very strong physically, but no special illness. Examination of the nose and throat was negative. The ulcer was treated for several weeks and finally cured, but it recurred occasionally for two years, until it was discovered that she had chronic appendicitis. The appendix being removed shortly after one of the attacks with the eye entirely eradicated the trouble.

While the etiology of dendritic ulcer is uncertain, it is considered by most authorities to be due to about the same cause as herpes. I feel quite convinced that this case was due to a toxic irritation of the nerve endings of the cornea from the focus of infection in the appendix. Another case which is significant of the fact that systemic disease may complicate our findings is as follows:

**CASE NO. 2:** Man, aged thirty, referred to me for examination, giving the history of a persistent iritis for a month. On investigating I found that he had moderate sized tonsils, with no sign of infection; that he had an upper molar tooth on the right side with an abscess at the root. Under advice this was removed, apparently giving him relief from his eye condition. He returned home, and in a few days the eye became as bad as ever. Investigation developed the fact that the eye condition was one of tuberculosis, which cleared up in a few months under tuberculin.

As an indication that we may have a direct bacterial invasion of the secondary part is illustrated by the following cases:

**CASE NO. 3:** Female, aged thirty-three, gave the history of repeated attacks of tonsillitis for several years. Two years ago, following an attack of tonsillitis, she developed a pain over the region of the appendix, which subsided with the tonsillar trouble. This condition repeated itself several times, until the appendix was removed by a surgeon, who found it infected with the same micro-organism as the tonsil.

**CASE NO. 4:** Male, aged twenty-eight. After a severe attack of tonsillitis he developed an inflammation of the seminal vesicles. The tonsils were removed after the acute infection subsided, but the seminal vesicle trouble remained persistent for several months, showing the same micro-organism that was found in the tonsil.

The clinical cases which follow show to our mind the toxic effect, rather than infection.

**CASE NO. 5:** Boy, aged twelve, who had been under my observation for two years, giving no history of rheumatism or other complications. He had very large tonsils, filled with pus. The operation was done by dissection and snare, the tonsils coming out completely in the capsule. At the end of forty-eight hours he developed a swelling and rheumatic pains in both lower extremities, nervous symptoms described by his mother as "horrors," which prevented him sleeping at night. The rheumatic condition lasted probably six weeks, when it passed off, leaving no effect behind.

**CASE NO. 6:** Female, aged twenty-six. Case of iritis referred to me for examination, which gave the history of repeated tonsillitis, no other cause for the eye condition being found. The tonsils were enucleated, and came out apparently intact in the capsule. The pain in the eye subsided within a few hours and there was decidedly less congestion within twenty-four hours. The improvement continued up to the fourth day, when the eye again became worse. On re-examination of the throat at this time, a small piece of tonsil was found low down in the fossa, which on being removed, the eye went on to an uneventful recovery in a short time.

In addition to the other troubles we have from focal infection, we are all aware of the functional nervous conditions, being of all grades from simple irritability up to chorea. In these cases when the focal point is found and removed, the condition passes away very rapidly. To my mind it seems but a short step from functional nervous disease to a direct change in the nerve element itself, even causing lesions of the brain and spinal cord. Owing to the anatomical structure of the nasal sinuses and their close proximity to the brain, infection of these will no doubt cause more trouble than infection of other parts of the body, due to the fact that many cases of sinus infection have no drainage through the natural opening into the nose, thus giving us a condition of pus under pressure, the toxins and bacteria of which can be disseminated through the body. Blindness from sinus infection, with all its accompanying symptoms, has become a well recognized fact. It seems to my mind that it is only a step farther to include in this, involvement of the central nervous system, not only abscess, but changes like multiple sclerosis. A case in point showing the infinite possibilities of focal infection, and which to my mind represents a nervous element, came into my hands several months ago.

**CASE NO. 7:** Nurse, aged twenty-six, reported to me with a history of having had repeated attacks of tonsillitis for a number of years. Two years before she had a pyelitis in one kidney, which now she believes to have been due to secondary infection from the tonsil, which necessitated a nephrectomy. She gave a history of being obstinately constipated for years, with no relief except from cathartics. Examination of the tonsils showed that they were very much diseased and a tonsillectomy was done. From that day the constipation has been entirely relieved. I believe this to be due to the relief of the toxic nerve irritation.

One of the hardest questions to decide is when to operate. In tonsil work we are always asked the question by the patient of what they were put there for and whether their removal would cause any harm. Our in-

vestigations so far leave us in doubt as to the function of this organ, but they have not left us in doubt as to the result obtained by its removal when in a diseased condition. By years of practice we have grown familiar with severe tonsillar infections, which clear up, leaving no trace behind, but at times we are confronted with cases of apparently slight infection, which before operating cause grave systemic trouble, as is illustrated by the following case:

**CASE NO. 8:** Boy, twelve years of age, was brought to me for examination, giving history of having a few days before had a very slight sore throat for the first time in his life. It was such a slight importance that it was not even reported to his mother until his recovery. Examination showed that he had a slightly enlarged tonsil on the right side, the other looking normal. To be on the safe side, I advised a tonsillectomy, but as vacation was only a few weeks off, the operation was deferred to that time. Before the time for the operation arrived, he had an attack of rheumatism and a heart involvement so severe that the anesthetist refused to give him ether.

It seems that there is no way of avoiding cases such as this, provided the man will remain even partially conservative. In going over my tonsil cases I try to find some cause for their removal—the graver things, such as rheumatism, nephritis, heart trouble, etc., or the smaller things, such as enlarged glands, chronically sore throat, irregular pulse, disturbance of digestion, nervous trouble of some character, or general lack of development of the child. At times one should operate on cases with only one symptom present, but in the majority of cases on a careful investigation more than one symptom will be found present. As to the results, I feel that we can safely say that, provided anatomical changes have not taken place in the secondary involvement, that the removal of the diseased focal point will give relief.

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## INTRA-OCULAR TUMORS—REPORT OF A CASE OF MELANOTIC SARCOMA OF THE LAMINA FUSCA CHOROIDEA

BY

DR. D. FOREST HARBRIDGE, Phoenix, Arizona

### PATHOLOGICAL REPORT

BY

DR. WILLIAM C. FINNOFF, Denver, Colorado

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(Read before the Southwestern Medical and Surgical Association, El Paso, Texas,  
December 8th, 1916.)

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Various types of tumors may involve certain of the intraocular structures; such as the iris, ciliary body, choroid, retina, etc. Those most frequently encountered are malignant in character such as glioma, sarcoma, metastatic carcinoma, etc. A smaller proportion, while perhaps strictly speaking are not malignant, yet lead to wide spread destruction of



the parts involved. If they do not entirely destroy vision, very marked impairment usually follows. Of this class may be mentioned cysts, tuberculoma, adenoma, melanoma, bony tumors, condyloma, etc. Condyloma of the iris is of fairly frequent occurrence. Santos Fernandez has recently reported nineteen cases; one followed an initial lesion one month previous.

Early diagnosis and immediate removal of the eye with as much of the optic nerve as possible is the only safe course in dealing with malignant intraocular tumors. This procedure has won for the ophthalmic surgeon a greater percentage of recoveries free from metastases than any other branch of surgery. The reason lies in the fact that the eye is an end organ, more or less isolated from the rest of the body, the growth being at first confined within a tough fibrous wall—the sclera.

The following case histories of sarcoma of the choroid apply in a general way to many types of growth within the eye:

Case 1: Through the courtesy of Dr. Zentmeyer, while I was first clinical assistant at the Wills Hospital, Philadelphia, I was able to observe this case almost from its inception. The patient was a railroad engineer, aged 49 years. During the two years preceding his visit he at first noticed a blurred spot in his field of vision. This later became a well defined positive sarcoma. There was present in the fundus, between the papilla and the macula a mound-like swelling or gibbous protrusion of about the diameter of the disc. Enucleation was advised but declined. In Zentmeyer's recent report of this case secondary glaucoma supervened seven years after the initial symptoms, at which time the eye was removed. Sections by Brinkerhoff showed that the growth was a mixed cell melanotic sarcoma in which the spindle cells vastly predominated.

Case 2: First seen November 28, 1905, at my clinic at the Chester Hospital. J. S. aged 50 years, telephone lineman, complained of lost vision in the right eye, it having practically entirely failed two months previous to his visit. At times there were present rainbow colored lights. No pain or redness or unusual appearance of the eye had been observed either by the patient or his friends. Examination showed a perfectly quiet eye, T. plus 1?. Pupil larger than its fellow, but responsive to light stimulus. Light perception, but distinctly limited in projection. With oblique illumination the anterior chamber was slightly shallowed, a moderate ciliary injection, and from the pupillary area was emitted a grayish reflex. By trans-illumination a large dense shadow was obtained from the nasal half of the globe. With the ophthalmoscope no view of the fundus was obtained; vessels however, were observed on the detached retina.

The left eye was in every way normal. A diagnosis of tumor of the choroid, or ciliary body, probably sarcoma, was made. The eye was enucleated nine days later. Shortly after operation the patient was discharged with a healthy orbit and no evidence of sarcomatous involvement in any part of the body.

Dr. C. I. Stiteler of Chester has within the past few days examined this patient and writes me that at the age of 61 years, eleven years after the operation, he can find no evidence of recurrence. The enucleated globe was bisected and placed in a specimen jar containing formalin gelatine in which it remained until examined recently by Dr. Wm. C. Finnoff of Denver, whose report is as follows:

Spec. 65: Eye removed eleven years ago. One half of globe submitted for microscopic examination. The eye had been imbedded in gelatin since removal. Macroscopically: Ant. Post. diameter of globe 23mm. Transverse at equator 24.5mm. Ant. chamber  $1\frac{1}{2}$ mm. deep in center. To the nasal side the iris and lens pushed forward and the ant. chamber is shallower than normal. Iris rests on lens, pupil 4.5mm. The nasal side of the globe contains a large tumor which extends from the pars-plano

ciliaris posteriorly to the edge of the disc. The tumor has grown into the globe slightly beyond median line, pushing the retina before it. Only a very narrow band of pigment covers the surface of the tumor, the remainder is non-pigmented. The retina is detached from the choroid and occupies the center of the globe. The choroid on the temporal side of the globe ant. to the equator is detached from the sclera over an area of 7mm. Externally the area over the tumor (the sclera) is whiter than the rest of the globe and is very vascular. The optic nerve stump is 7mm. long.

The gelatin was liquefied and specimen washed in water. Then transferred to 80%, 95% and absolute alcohol. The eye is then imbedded in celloidin and sectioned. The globe was cut about 3mm. from surface and lower half sectioned. The optic nerve cut 1  $\frac{1}{8}$ mm. behind globe and the remaining 5  $\frac{1}{8}$ mm. saved for microscopic sections.

Microscopic examination: Sections stained with haematoxylin and eosin. Cornea normal. Angle of the anterior chamber on the side of the tumor is obliterated by the iris, which has been pushed forward by the tumor growth.

The iris, except for thickening of the arteries, is normal.

The ciliary processes are somewhat flattened and the walls of the blood vessels are thickened. During imbedding, the posterior two-thirds of the pars-plano ciliaris was separated from the sclera, at the ora serrata the retinal detachment begins; the retina being separated from the choroid by a gelatinous exudate. The choroid at the ora serrata is slightly oedematous. Around the larger and medium sized vessels, an infiltration of poly and mona nuclear leukocytes has taken place. The choroid rapidly becomes more oedematous and the fibers of the lamina fusca become separated by a clear exudate in which are seen a few leukocytes. The remainder of the choroid is pushed forward, the pigment epithelium swollen by oedema and many of the cells have lost their pigment granules;  $\frac{1}{2}$ mm. post. to the ora serrata, the whole choroid becomes lost in a large tumor mass.

The tumor arises from lamina fusca and invades the choroid, so that the tumor cells rest directly on the sclera. It begins anteriorly  $\frac{1}{2}$ m.m. from the ora serrata, and extends posteriorly to the edge of the optic nerve. The tumor has the greatest lateral diameter at the equator of the globe. The cells of this new growth are spindle shape with the nucleus occupying the greater portions of the cells. Many cells show karyokinetic changes. There is little or no intracellular substance. The cells close to the sclera are pigmented, and have grown between the fibers of the lamina fusca. The blood vessels of the tumor are numerous the larger being lined with a single layer of endothelium, while many of the smaller are simply channels surrounded by tumor cells. A hemorrhage has taken place near the center of the tumor and red corpuscles are seen between the cells.

The sarcoma cells have no special arrangement except at the apex of the tumor where they are arranged in parallel rows, deeply pigmented and with many well-formed blood vessels resembling choroidal vessels.

The lamina vitrea with its covering of pigment epithelium is ruptured and does not completely cover the tumor, only ascending a short distance on either side. The typical mushroom shape to which Parsons calls attention, therefore, is not present. In many places the pigmented epithelial cells have degenerated, leaving only a vacuole where they formerly were.

The choroid covering the posterior portions of the growth is thrown into numerous folds, is oedematous, and infiltrated with polymorpha nucleus leukocytes, lymphocytes and plasma cells. The choroid in the remaining portion of the globe is slightly infiltrated with lymphocytes and plasma cells which surround the larger vessels.

The retina is entirely detached from the choroid, only being attached at the optic nerve and ora serrata. The nerve fiber layers of both portions is in opposition. The whole structure is oedematous and small cystic spaces are seen between the nuclear layers. The retinal arteries are much thickened.

Optic nerve stains poorly, enough detail, however, can be made out to prove that no metastasis of sarcoma cells has taken place within this structure. Sections of the nerve 7mm. behind the globe reveals normal nerve. The vessels enter and leave the nerve about 7  $\frac{1}{2}$ m.m. from the globe and their walls are thickened, but no tumor cells or inflammatory exude surrounds them.

There are no tumor cells in sclera.

Diagnosis: Small spindle cell melanotic sarcoma arising from the lamina fusca choroidea.

Malignant tumors allowed to progress without surgical interference are marked by four stages. The first stage, invasion, development of the growth, and detachment of the retina. The amount of interference with vision depends upon location. Second, or glaucomatous stage, accompanied by inflammation and increased tension. The onset may be sudden, but is not necessarily dependent upon the size of the growth, for a small tumor may precipitate an attack. Two years ago Weidler stated that he believed that secondary glaucoma was purely mechanical and was due to the increasing size of the mass. I am rather inclined to doubt this, for not only is it the increasing size of the growth but more particularly the augmented serous exudate into the eye and impeded outflow of fluids. The third stage is when the globe has ruptured and extra bulbar growths have formed. Metastases to other parts of the body marks the fourth stage.

In the preparation of the chapter on tumors in the Ophthalmic Year Book, I find that during the past four years about two hundred intra-ocular tumors have been reported in current literature. It is, therefore, of infrequent occurrence in the routine experience of the oculist, so one is compelled to turn to literature for much of his information. While a differential diagnosis of the various eye tumors is in a measure academic in value, in so far as treatment is concerned, yet there are certain general characteristics which should always be considered in dealing with this class of eye diseases.

Sarcoma is almost always a primary growth, rarely it may be metastatic. Thus early removal of the eye has resulted in from 25 to 30 per cent of non-recurrence either locally or in distant parts. About 80 or 85 per cent of all growths found within the eye are of this type. Tumors of the choroid are almost always sarcoma.

Arganaraz found in a study of a series of 54,000 clinic patients, nineteen sarcoma, one of which was leucotic, in another series of 100,000 patients he found thirty. Sarcoma is usually a disease of middle life, from the 20th to the 60th year, yet Bussey and Shuman report a patient aged 3 years, while Lawford's patient was a lady aged 90¾ years. The growth affects the uveal tract, giving metastases to distant parts of the body, frequently the liver. It is composed of small round or spindle cells, or mixed. The leucotic or non-pigmented is extremely rare, the melanotic or pigmented being the usual type. While Lo Cascio obtained negative pigment reaction for melanogen he believes the chemical constitution is very similar to normal choroidal pigment.

Carcinoma is always metastatic, although Neepor reports a case involving the ciliary process in a man aged 71 years, in which no primary focus could be discovered. During the past four years only about a dozen cases have been reported by Weeks, Nicolai, Van der Hoeve, Dawney and others. The rarity of this form of intra-ocular tumor should attract attention in view of the frequent occurrence of the disease in other parts of



the body. This infrequency is accounted for, however, by the theory that the eye is an isolated organ receiving its blood supply from the main trunk at an acute angle.

Glioma, (neuro-epithelioma, non-pigmented cancer) is of the nervous tract and extends by continuity along the same to the brain, seldom, if ever, giving metastases to the other parts of the body. It is a condition observed only in young children, unfortunately in a large proportion of instances only when it is well advanced. Owing to the child's inability to notice loss of vision, it is usually the parents whose attention is attracted later by the appearance of a whitish or golden-yellow reflex from the pupil; amaurotic "cat's eye." The disease is observed most frequently between the ages of 3 months to 3 years. Berrisford's statistical report from Moorfield Hospital from 1871 to 1913 reports three cases observed at birth and two cases as late as the 6th year. The relative frequency was .01 per cent of all eye cases. Wintersteiner places it at 04. per cent of all eye cases. The latter is probably more nearly correct, for the disease is one strictly of childhood, the above statistics being compiled from all classes of eye patients presenting themselves at the clinic. Berrisford found the ratio of one to seven, while Wintersteiner's observations were that 25 per cent of all cases were bilateral.

The disease may affect more than one member of a family, as illustrated by the history of the Grover family. Frank lost one eye, his son lost one eye. Frank's sister married, eight children were born, four of which had glioma. De Gouva removed a gliomatous eye from a patient who later married a woman with no neoplastic history. Seven children were born of the union, the second and third dying of the disease.

Glioma starts from the two granular layers of the retina, mainly the inner. In contra distinction to sarcoma it is never pigmented. Sections show the rosette arrangement of the cells around a central opening. The cells contain a large nucleus with a small amount of protoplasm, many having fine processes, those near the central opening have a greater amount of protoplasm, giving them a long cylindrical cell appearance. The periphery of the rosette shows evidence of degeneration. Some are glia cells, others are ganglion cells. The microscopic findings have been fully described by Wintersteiner.

The usual course of the disease is progressive, yet Meller reports a case in which one eye was removed, its fellow contained three gliomatous tumors. Five years later this eye was examined and found to have undergone involution. Vision was normal. Purscher's case was a very unusual illustration of retrogression. Of eleven children two died of bilateral glioma, two sisters showed retrogression. One of the daughters married and of three children one died of glioma and the second showed retrogression.

Recovery, following enucleation, is more favorable if the growth has not passed beyond the lamina cribrosa. A patient remaining free from

recurrence more than three years is considered safe. Adams' studies showed 54 per cent well after three years, while Wintersteiner found only 16 per cent.

Pseudo glioma is to be looked upon as an inaccurate term as commonly applied to many conditions. A differentiation should be made in metastatic ophthalmia, exudativa choroiditis, certain tubercular lesions, detached retina, etc.

In true glioma the tension is elevated, while in pseudo glioma it is lowered. This, however, proved a fallacy in Sydney Stephenson's two cases. The tension being elevated and under diagnosis of probable glioma the eyes were excised. Pathological examination showed retinitis exudativa.

Many of the less frequent types of intraocular growths are often never diagnosed until the eye is sectioned. To conclude: It is the part of wisdom to remember that an adult's eye with a history of being blind, suddenly becoming inflamed, hard, and painful is an object of serious suspicion, for frequently the smallest tumor can excite a glaucomatous attack.

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## THE USE OF CORPORA LUTEA IN THE TREATMENT OF THE NAUSEA AND VOMITING OF PREGNANCY.

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BY

ERWIN J. CUMMINS, El Paso, Texas

(Read before the El Paso County Medical Society, April 27, 1917.)

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It is a recognized fact that with the advent of pregnancy ovulation almost invariably ceases. The true corpus luteum is the corpus luteum of pregnancy. It is necessary for the nidation and stability of the product of conception. The corpus luteum reaches its growth about the thirteenth week of pregnancy and is then gradually absorbed. It is about the same time that the nausea and vomiting of pregnancy cease.

Bearing this fact in mind, it was thought that the administration of the extract of corpus luteum at the onset of the morning sickness might relieve these symptoms. The product used in these cases was Corpora Lutea (soluble extract) put up by Parke, Davis & Company, each ampoule containing one c. c. of the extract, equivalent to three grains of desiccated gland. I have used it in six consecutive cases. It was successful in checking the nausea and vomiting in all but one. One of the six cases had hyperemesis gravidarum. The drug was administered intramuscularly and no untoward symptoms noted.

Case 1. Quadripara with toxemia of pregnancy. Her previous pregnancies were accompanied by such distressing symptoms that, after all

treatment failed, her physician advised terminating them, which was refused. When first seen she was bed-ridden and could retain nothing in her stomach. Eighteen doses of *Corpora Lutea* were given with complete relief.

Case 2. Primipara. Age 27. Six weeks pregnant, nauseated and vomiting daily. Four doses relieved these symptoms.

Case 3. Primipara. Age 19. Three months pregnant, nauseated and vomiting. Five doses gave relief.

Case 4. Pregnant three and one-half months. Seven doses controlled her nausea and vomiting.

Case 5. Six weeks pregnant. Two doses relieved her considerably. She discontinued treatment and symptoms returned. Three doses more gave complete relief.

Case 6. Age 32. Three months pregnant, vomiting many times a day. Five doses, no relief; if anything, symptoms aggravated. Patient had had a severe exophthalmic goitre removed three years previous and symptoms of thyroidism returned.

Two-thirds of all pregnancies are accompanied by nausea and vomiting to some degree. All should be checked, if possible, with view to preventing an aggravation of the condition. *Corpora Lutea* will undoubtedly control these symptoms in a large percentage of cases.

3229 Aurora Street.

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## ORTHOSTATIC ALBUMINURIA WITH REPORT OF A CASE

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BY

W. R. JAMIESON, M. D., C. M., El Paso, Texas

(Read before the 25th Annual Meeting, Arizona Medical Association, April 26, 1917.)

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By the term orthostatic albuminuria is meant that particular form in which albumin is present in the urine only while the patient is up and about, and which gradually disappears when the recumbent posture is assumed. In some cases the albumin appears shortly after assuming the upright position, while in others its advent may be delayed from one to three hours.

Exercise or the ingestion of food seems to have no influence on the secretion of albumin.

The etiology of this condition has been very much discussed, but, as yet, no very definite factor or factors have been discovered.

Teissier (*Deut. Med. Woch.*, Aug. 26, 1909) examined 150 girls to determine the influence of curvature of the spine on orthostatic albuminuria, and found it was not the exclusive cause, though an important factor,



due to its interference with kidney circulation. In four cases albuminuria could be induced by artificial lordosis. During the years of most active growth, the vertebrae are not supported so firmly, though physiological curve becomes exaggerated by the laxness of the ligaments.

Stilles & Jehle (Berliner Klin. Woch., Sep. 30, 1912) go further into the subject of albuminuria induced by artificial lordosis and say:

This asthenia is the basis on which the albuminuria develops, as also the narrowing of the upper aperture of the chest, all consequences of the general asthenia caused by the tendency to sagging of the viscera, nervous dyspepsia, neurasthenia of both volitional and vegetative nervous systems, motor, sensory and secretory disturbances of the stomach, splashing sound, etc.

This constitutional inferiority is responsible for the development of the albuminuria on slight cause.

Broadbent (Brit. Med. Journ., Jan. 2, 1904) claims that a neurotic family history, along with cardio-vascular instability, is the commonest antecedent—a view which is sustained by Bars & Wessler (Arch. Inter. Med., Vol. XI., No. 2), though the cardio-vascular insufficiency is not associated with any hypertrophy or dilatation of the heart, which was usually smaller than normal.

Gonolitsky (Zeit. f. Klin. Med., Vol. LXXVII, No. 1) says he has proved by experiment that trauma plays no part in causing orthostatic albuminuria. It does not develop unless there is functional infection weakening the organism at the period of its most intensive growth. These factors are sufficient without incriminating lordosis.

That lordosis may cause stagnation in the renal vessels and so induce albuminuria is the view held by Deitl (Wien. Klin. Woch., Feb. 13, Vol. XXVI). But that a sound vasomotor system is generally able to compensate for this.

Arnold (Munch. Med. Woch., Mar. 4, Vol. LX) says that orthostatic albuminuria is met with in some cases of early and untreated syphilis, almost as frequently as in the early stages of tuberculosis, so that it should not be regarded as a sign of incipient tuberculosis unless syphilis can be excluded.

To sum up, orthostatic albuminuria is met with in lordotic cases where there is more or less mechanical interference with the renal circulation, in cases where no lordosis exists, but where cardio-vascular instability or inefficiency is the main factor and in cases of early syphilis and tuberculosis.

The urine in these cases is absolutely normal if taken when the patient is lying down, and contains albumin in addition if taken after he has been on his feet for a time.

The phenolsulphonephthalein and lactose excretion are normal. In the case which I wish to report the only factor to be found is a mechanical interference with the urinary excretion or with the renal circulation. None of the factors given as causing this trouble is to be found.



X-Ray showing impaction and sliding forward of the 4th on the 5th lumbar vertebra, with fracture of transverse process of 4th. Dr. Jamieson's case.





Male, auto salesman, 25 years, weight 160, height 6 ft. 2 in., has always enjoyed good health outside of a gonorrhea several years ago which was treated and cured.

About a year ago he applied for life insurance and was informed that his urine contained albumen. About two months ago he applied again and was refused for the same reason. He then came to me as his physician to assure himself that such was the case.

Physical examination of the heart, lungs, and abdominal organs revealed nothing except some tenderness between last rib and ileum on left side. P. 76. B. P. 125.

The urinary examination was as follows:

Urine taken while lying down:

Sp. G. 1006. Alb. minus. Urea 0.025.

Red cells, none. Casts, none.

Urine taken after being up and about three hours:

Color, clear amber. Reaction, acid. Sp. G. 1017.

Alb. and urea, 0.01. Red Cells, many. Casts, none.

The patient stated that he had been hurt in an automobile accident some two years previously and that since then his health had not been as good as formerly.

On March 2nd, 1916, 1 c. c. of sul. of phthalein was injected in the buttock, and excreted as follows:

First hour, 45 per cent.

Second hour, 25 per cent.

The ureters were catheterized and the urine from the right kidney was found to be free from albumen, while that from the left had quite a large amount.

An X-Ray plate of both kidneys was taken which shows an impaction and sliding forward of the fourth on the fifth lumbar vertebra with a fracture of the transverse process of the fourth. The kidney position on both sides is practically normal, so that there must be some interference with the ureter when he stands up that results in a damming up of the urine in the left kidney with a transient hydronephrosis.

No treatment has been carried out in this case, as it is exceedingly difficult to determine what the treatment should be.

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## EDITORIALS

### COMPULSORY SOCIAL INSURANCE

What is compulsory social insurance? The editor of this journal confesses his ignorance and with the great body of American physicians he believes that the answer would be the same. Few know and less seem to care, but it is time that the American profession posts itself on this important subject.

In a recent bulletin by Frederick L. Hoffman, LL. D., Statistician of the Prudential Insurance Company, entitled "FACTS AND FALLACIES OF COMPULSORY HEALTH INSURANCE," a most exhaustive study of the question is made. As with all other work done by Mr. Hoffman, every phase of the subject is discussed after a most critical examination of the data concerning it. The subject matter is too voluminous to take up in detail at this time but his conclusions should be of interest, and we suggest that physicians interested in this question obtain a copy of the publication from the Prudential Insurance Company.

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### THE MEDICAL PROFESSION AND THE ARMY

Will conscription of physicians ever be necessary?

The answer depends entirely upon the voluntary response to the needs of the government in the creation of the great army now under way.

In the National Guard, when its quota is full, there will be 433,800 men; in the new regular army there will be 293,000 men, and in the first draft of the new national army there will be 500,000 men—a total of 1,226,800, with mobilization practically immediate. The minimum number of medical men—that is the medical men actually on active duty with the army and not in hospital units or otherwise engaged during the war—called for by this first contingent of our new army will be 8,600. This is only a beginning, for we must remember that there is a probability of an early call for a second and then again for a third 500,000 men, with a strong possibility of a fourth 500,000, making a total enlistment of over two million.

To properly handle the medical work of this vast army there will be need of twenty thousand physicians, at the lowest estimate, and they must be furnished from among the one hundred and fifty thousand physicians in the United States—by voluntary enlistment if possible, but certainly by draft if necessary.

What are you going to do—you whose eyes scan these lines?

Will you voluntarily offer your professional services to your country in this hour of need, or will you force her to force you to do your duty?

In the estimate as outlined above it means that about one in each seven of the physicians of the United States will be needed for the work before the country—will you be one of the seven?

The age limit for enlistment in the Medical Reserve Corps is fifty-five years.



## NEWS NOTES

*New Mexico*

Doctor Troy C. Sexton of Las Cruces has applied for a commission in the Medical Reserve Corps. Others in New Mexico have probably done the same thing, but the fact has not been made known to the secretary of the State Society.

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Doctor W. G. Hope of Albuquerque has recently returned from the Chicago and Mayo clinics. While away Doctor Hope attended the general clinics and did special work on the throat.

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Doctor Samuel D. Swope of Deming, delegate to the American Medical Association, was prevented from attending the 1917 meeting of the A. M. A. by reason of his military duties. Doctor W. T. Joyner of Roswell, the alternate delegate, represented New Mexico in the House of Delegates. Doctor Swope is one of the surgeons of the New Mexico National Guard and has recently been examining the recruits who will probably see duty in foreign lands.

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The Roosevelt County Medical Society has been re-organized with a satisfactory membership.

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Doctor F. H. Crail of East Las Vegas has been named by President Losey as fraternal delegate to the meeting of the Colorado State Medical Society.

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October 4th, 5th, and 6th have been chosen as the dates for the annual meeting of the New Mexico Medical Society. The Dona Ana County Medical Society will be the hosts and Las Cruces the meeting place.

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*Arizona*

*Prescott, Ariz.:* The small and patriotic coterie of medical men of Prescott are feeling the burden of war times with more than usual intensity. Major Yount has been with the National Guard since they were first called to the border. Recently Dr. Southworth, a member of the Medical Reserve Corps, received orders to report at Fort Riley, Kans., for training.

*Superintendent of Public Health:* Dr. J. Bernard Nelson, of Mesa, Ariz., has been appointed to the office of Superintendent of Public Health for Arizona. Dr. R. N. Looney was forced to tender his resignation from this office, in order to take up the practices of Drs. Southworth and Yount, of Prescott, with whom he is associated. Dr. Looney is securing an assis-

tant from Los Angeles to aid him in carrying the triple burden which has fallen on him. Dr. Yount and Dr. Southworth are both in the service of the United States Government.

*State Hospital for the Insane:* Dr. John R. Walls, of Tucson, has been appointed Superintendent of the State Hospital by Governor Campbell, succeeding Dr. Kingsley.

*County Tuberculosis Societies:* Following out the new plans of the Arizona Anti-Tuberculosis Association, an intensive campaign of organization is being carried on in several counties in Arizona. Maricopa County will establish a Tuberculosis Clinic, and employ a visiting nurse. The salary and expenses of the visiting nurse have been pledged by business firms in Phoenix, and an automobile donated for her use. Other counties are likely to follow suit.

*Gila County:* Dr. and Mrs. C. T. Sturgeon have returned from a tour to the Grand Canyon.

Dr. G. S. Martin of Safford, who is a member of our society, is stationed at Roosevelt Dam with the troops of the Arizona National Guard.

The following Globe physicians have made application for membership in the Medical Reserve Corps: Drs. R. D. Kennedy, W. W. Horst and S. S. Irvin. Drs. J. E. Bacon and C. Gunter are already members.

## EL PASO COUNTY MEDICAL SOCIETY LIBRARY

**War Literature.** Several new volumes have been added lately, notably: The Nation's Health, the Stamping Out of Venereal Diseases; Sir Malcolm Morris. A Complete Handbook for the Sanitary Troops of the U. S. Army and Navy, Col. C. F. Mason.

Military Hygiene and Sanitation, F. R. Keefer, M. D.

Die willkürlich bewebare Kunstliche Hand, F. Sauerbach.

Orthopadische Behandlung Kriegsverwundeter, Hans Spitz.

Autoplastic Bone Surgery, C. Davison and Franklin D. Smith.

Military Surgery, Dunlap P. Penhallow.

Gunshot Injuries, How Inflicted; Complications and Treatment; Col. Louis A. La Garde.

Also, The British Medical Journal, The Lancet, and the British Journal of Surgery can be seen.

The Library is in the Roberts-Banner building, El Paso, and is open from 9 until 5 o'clock. Efforts are being made to secure files of the leading journals, and many editors have already agreed to exchange with SOUTHWESTERN MEDICINE. About 100 journals come in regularly. Drs. W. and C. Mayo kindly gave their CLINICS, and the PROCEEDINGS and TRANSACTIONS of the various Medical and Surgical Societies have also been promised. A list of all the best recent articles appearing from week to week is filed for quick reference, and the Librarian welcomes any suggestion as to desirable new books or journals likely to be asked for by readers. Abstracts, notes or references can be furnished on any subject.

Some books recently acquired:

The Newer Physiology in Surgical and General Practice. A. Rendle Short. 3rd Ed., 1915.

The Basis of Symptoms; Clinical Pathology. Ludolph Krehl. Translated from 7th German edition by A. F. Beifield. 1916.

Infection, Immunity and Specific Therapy. J. A. Kolmer. 1915.

Pyelography. W. F. Braasch. 1915.

Cataract, Senile, Traumatic and Congenital. W. A. Fisher. 1917.

Alveolodental Pyorrhea. C. C. Bass and F. M. Johns. 1915.

Therapeutic Exercise and Massage. C. H. Bucholz. 1917.

A Manual of Nervous Diseases. I. J. Spear. 1916.

What is Psychoanalysis? Isodor H. Coriat. 1917.

The Surgical Clinics of Chicago. Vol. I, parts 1 and 2. 1917.

The Endocrine Organs. Sir Edward Schafer. 1917.

The Art of Anesthesia. P. J. Flagg. 1916.

Gynecology. W. P. Graves. 1916.

Obstetrics, Normal and Operative. G. P. Shears. 1916.

## BOOK REVIEWS

## CATARACT, SENILE, TRAUMATIC AND CONGENITAL

By W. A. Fisher, M. D., 1917. Published by The Chicago Eye, Ear, Nose and Throat College. When we find numerous articles and many books, on the same subject, we may feel sure that it has not reached that stage of perfection of diagnosis, treatment or operative technique, necessary to preclude further writing.

This is the case with the extraction of cataract. The standard operation for senile cataract in America for years was done by rupturing the capsule and expelling the lens through the corneal opening, either with or without iridectomy. This left much to be desired, as frequently the thickening of the capsule caused such a dense secondary cataract that vision was impaired, even when needling of this membrane was resorted to.

A number of years ago, Lieut. Col. Henry Smith, of India, brought to our notice an operation for expelling the cataract in the capsule. Owing to the amount of clinical material which came into his hands, amounting to many thousand patients



a year, he was able to perfect a technique which gave better results than the old capsule operation.

The discussion of these two methods during the past number of years has kept the journals pretty well filled with literature on the subject.

Dr. Fisher's book is a reprint of many of his papers on the technique of intra-capsular operation, showing his modification of the Smith method, and advocating the author's lid hook in place of the ordinary eye speculum, claiming—and justly so—a less frequent loss of vitreous than in many other methods. Unfortunately, the illustrations, while numerous, are not overly good.

One point worthy of notice is that the book gives credit to an American, Dr. John W. Wright, of Columbus, Ohio, as the first man to perfect the intra-capsular operation, having published his first article in 1884, and continued using this method for many years afterwards. The book has no doubt a place in the library of the ophthalmologist.

—H. H. S.

### A MANUAL OF PHYSICAL DIAGNOSIS

By Austin Flint, M. D. Seventh Edition, revised by Henry C. Thacher, M. D., Lea & Febiger, publishers, New York. Price, cloth, \$2.50.

This excellent monograph goes very carefully into the principles of chest examination in a manner quite characteristic of its author, who was for many years considered a leading authority on physical diagnosis. The subjects of percussion and auscultation, both in health and disease, are carefully considered in much detail, and men who are not familiar with the practical application of the principles of these can get much of value from this book. The chapter on the diagnosis of diseases of the heart and thoracic aneurism is especially good, and a brief but well written chapter on the examination of the abdomen contains much of practical value.

In the revision, the editor has introduced a chapter on the physical basis of auscultation and percussion of the lungs, which presents the subject more clearly than we have seen elsewhere. Altogether, he has brought the book up to the present knowledge very completely, and it is well worth a place in any medical library. We cannot have too many books on physical diagnosis.

H. B. H.

### A MANUAL OF NERVOUS DISEASES

By Irving J. Spear, M. D. Professor of Neurology at the University of Maryland, Baltimore. 12mo., 660 pages, with 169 illustrations. W. B. Saunders Company, Philadelphia and London. 1916, Cloth, \$2.75 net.

In the opinion of the reviewer, where a special text book is intended for the general man, the review should be made by a general man rather than by a specialist on the subject.

A Manual of Nervous Diseases, by Irving J. Spear, M. D., has been carefully reviewed from the viewpoint of a man doing mainly surgery and practicing general medicine to a slight degree. This text has not been scanned, but carefully read, the detail of each chapter has been weighed, and the points that would appeal to the general practitioner have at all times been considered.

The text is well proof-read, clear in diction and systematic in arrangement, so that the subject matter the general man may be looking up is readily found. The chapter on examination of the cerebral and spinal nerve supply, with illustrations of the superficial and deep reflexes, is clear and definite, and more accurate than any text book the reviewer has had an opportunity to read.

The chapter on examination of the nervous system alone is well worth the price of the book. The average practitioner or general surgeon as a rule is not well prepared to study a case of nervous disease, or to interpret it from spinal or from a cranio-cerebral sense.

The chapter on individual nervous diseases, dealing with them from a cranial or spinal view point, is clear and definite as to etiology and symptomatology, but weak on treatment.

The section devoted to diseases of the crura pons and medulla is especially good, very clear and accurate as to the definite point of location of the pathological lesion; this section will be of immense value to the man who attempts to diagnose cerebral conditions.

The general practitioner is the man who first sees a case of nervous disease, and he is the man who must necessarily separate and differentiate the various forms of headache, or other symptoms of a cerebral lesion, so that the case may be properly referred to the specialist.

The reviewer heartily recommends this text book to his colleagues and assures them that it should be in their libraries; for it gives a brief, accurate description of the subject dealt with.

H. C.

**The Endocrin Organs.** An introduction to the study of internal secretions.

Sir Edward Schafer, SS. D., D. SC., M. D., F. R. S. Professor of Physiol., Edinburgh University.

This is a book of 150 pages. It is founded upon a course of lectures delivered at Stanford University, California, and is a condensed account of endocrinology, free from vague theories and speculations. The illustrations are exceptionally good. Anatomical descriptions are peculiarly lurid and the physiological action of the different hormones or autacoids is remarkably clear and definite. Doubtful points are presented with judicious caution and the unknown is ignored.

Much interesting information of a very reliable character will be found in this little volume. The important nature of the endocrin organs is indicated by their very abundant blood supply, four or five times that of other tissues. The important role of the adrenals in the acute infections is emphasized. Very few therapeutic directions are made, but the thoughtful reader will find much food for thought and will gain a clearer insight into many of the obscure ailments, especially concerned with metabolism, and growth and development, such as obesity, diabetes, cretinism, dwarfism, giantism, etc. It is a book for the beginner. Those who wish to pursue the subject will consult the new journal of Endocrinology and the larger books of Biedel, Saious, Venient and others.

—G.W.

**A Complete Handbook for the Sanitary Troops of the U. S. Army, etc.** Colonel Charles Field Mason, Medical Corps, U. S. Army. 4th edition, 1917. William Wood & Co., New York.

In most volumes written for the junior and the senior members of military and naval hospital staffs, too much is assumed to be known. "Always say where London is," advised a leading journalist to an amateur, and Col. Mason has wisely acted on this suggestion and gone carefully and clearly into every detail concerning the sanitary, dietetic, medical, surgical needs in time of peace, even to management of the horses and wagons. If all the rules given in the first part should be observed, then, in war time, one-third of those in the second would be unnecessary, but the author knows the weak points of even an apparently model camp, so he brings to the help of the wounded soldier all that should be wisely done by cook, nurse, orderly, doctor and surgeon.

The civilian doctor who will be joining up with the forces in Europe, will find in the book everything concerning the construction and carrying on of a Unit or Base Hospital and may clear a path for himself through the bewildering intricacies with the competent aid of Col. Mason.

—D. W.

## BATTLE CREEK, MICHIGAN

The idea of spending a vacation in a Sanitarium may seem good to one who does not understand how a great Sanitarium is conducted today. Its healing devices do not stop with the procedure set down in medical text books, but include agreeable surroundings and healthful diversions of many kinds, to keep patients from brooding over their troubles. Exercise, instead of being a tedious task, is taken in such attractive and varied forms that it becomes a delight. A Sanitarium managed on such lines offers all the pleasures and attractions of an ordinary summer resort, and much besides. The business man who thinks he is merely run down and needs only rest, knows that in such an institution, a corps of experienced physicians, backed by complete diagnostic apparatus, can tell him exactly wherein his mechanism is showing signs of wear and just what repair processes he needs. He knows that instead of the rich, haphazard menu of our expensive hotel, he will have the foods which he needs, skilfully prepared to tempt his appetite. Late hours and nerve-racking amusements will be replaced by rational pleasures. Best of all, a course in health training will enable him to return to his work with a knowledge that will increase his efficiency and lessen the likelihood of ill-health. That this attitude is widespread is shown by the fact that the patronage of the Battle Creek Sanitarium in summer is much greater than in winter. People flock to Battle Creek in largely increasing numbers when the balmy days of June come.

## ADVANTAGES OF GERMICIDAL SOAP

On solution in water Germicidal Soap (McClintock) liberates a small quantity of free alkali. This prevents the coagulation of albumen and permits the mercuric iodide contained in the soap to thoroughly penetrate bacterial and tissue cells.

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## AFLOAT AND ASHORE

Two new products which are attracting unusual attention, both in this country and abroad, are CHLORAZENE (Abbott), Dakin's New Antiseptic, and PARRESINE (Abbott), the improved, hot-wax dressing for burns. Both of these remedial agents have been passed by the Council of Pharmacy and Chemistry of the American Medical Association, to appear in their "New and Non-Official Remedies," and have been ordered by the United States Navy to be placed on every ship.

The results which are reported by surgeons and hospitals in the use of CHLORAZENE and PARRESINE are so remarkable that it would surely pay every physician to become better acquainted with these products.

Literature will be sent on request to The Abbott Laboratories, Chicago, Illinois.

## JOURNALS WANTED

Will any doctor who takes in the following journals but does not keep them, transfer them to complete the files in the El Paso County Medical Library from January 1st to May 1st, 1917?

The New York Medical Journal.

The Medical Record.

Journal American Medical Association.



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314 Mills Bldg.

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4 to 6 p. m.

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# Southwestern Medicine

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El Paso, Texas, July, 1917

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## INTESTINAL OBSTRUCTION WITH REPORT OF CASES

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BY

DR. R. L. RAMEY, El Paso, Texas

(Read before the El Paso County Medical Society, April 16, 1917.)

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Intestinal obstruction is one of the most important abdominal conditions we have to deal with. The different types of obstruction are as numerous as the causes which may range from a simple paralysis of the bowel to a complete occlusion.

There is no other trouble in the abdomen in which so much depends upon an early diagnosis—I refer to the acute types. If you do not resort to surgical interference during the first 48 hours after the onset of the symptoms the mortality will run very high. The symptoms sometimes come on so gradually that we fail to recognize the true condition, before gangrene has set in or the vitality of the bowel is so much impaired that a resection is necessary which lessens very materially the chances of recovery.

The symptoms of obstruction are modified both by the amount of stenoses (whether complete or incomplete) and also by its anatomical location. If the obstruction is near the stomach you will get vomiting early, but not marked distention of the abdomen. On the other hand, if the trouble is low down, you get your distention and tenderness early but vomiting may be late. The diagnosis is sometimes clear, as in hernia when you have a visible incarcerated gut, but you will often have cases in which you can not rely on any one symptom or set of symptoms.

Acute mechanical obstruction is more often confounded with peritonitis than any other trouble. Especially is this true following abdominal section. The symptoms are more or less parallel, both often beginning suddenly accompanied by pain, distension, vomiting, tenderness and pressure, inability to pass gas, rigidity of muscles, rapid pulse, collapse, both may have subnormal temperature. But, as a rule, peritonitis will have a rise of temperature before the more pronounced symptoms begin, whereas in mechanical obstruction you usually have a very little, if any, rise of

temperature, and the condition begins as a rule with severe pain and without warning.

However, in differentiating between peritonitis and obstruction one should look carefully into the history of the case, examine all hernial openings, examine by rectum and vagina, make blood count, urinary examination, etc.

That form of obstruction due to paralysis or adhesions following abdominal section can often be avoided by the careful handling of the intestine and by covering all raw surfaces with peritoneum. If you do not drag upon the mesentery, paralyzing the nerves, rarely will you have trouble following abdominal operation. I believe Dr. Crile gets the remarkable results he claims from the careful handling of the abdominal viscera rather than from his combined method of local and general anesthesia.

In those cases of paralysis of the bowel following operation it is rarely necessary to do more than stomach lavage, pituitrin and eserine hypodermically, and try to get rid of gas.

The treatment for acute mechanical obstruction if seen early is simply to free the bowel and preclude the possibility of return by further operation if necessary. The operation should be done with as little traumatism as possible. If the gut requires resection and your patient is in a weakened condition, bring the gangrenous or dead part out of the abdomen, make an artificial opening in the bowel and do a second operation. If the patient is in good condition, complete the operation at one sitting.

In general peritonitis, do not rely too long upon morphine, Murphy drip, Fowler position, etc. I believe it is good surgery always to drain the bowel if your patient is much distressed and symptoms unfavorable.

**Case No. 1.** J. E., male, age 36, was brought to me from Alpine, Texas, by Dr. Middlebrook. Patient had been ill about 24 hours before leaving home. When seen, a tumor the size of a hen's egg was presenting in the right femoral ring, abdomen rigid, intense pain and pressure, vomiting continuously, no movement of bowels, no gas. An easy diagnosis of obstruction was made, due to the incarcerated femoral hernia. In order to reduce the bowel, the opening had to be enlarged. The gut was examined and it was found that the color changed somewhat when hot applications were applied. Consequently, it was returned. The femoral opening was closed with silk mattress sutures. Patient recovered.

**Case No. 2. Traumatic Obstruction.** P. Mc—was riding horseback when thrown, falling on the abdomen and had considerable pain immediately but was able to continue his trip home. Two days after accident he was brought to El Paso. I was called to see him and found a rigid condition of abdomen, vomiting, not able to pass gas, bowels had not moved after repeated enemata and purgatives, (I would like to state that I did not prescribe the purgatives, they were used by the family before I saw the patient) pulse very rapid, and slight rise of temperature. A diagnosis of perforation or severe injury to bowel was made. Dr. Richmond saw this case with me. The patient was sent to the hospital and abdomen opened. In the upper part of the jejunum a rent in bowel extending through peritoneal and partially through the muscular coats was found about 3 inches in length. The condition of the bowel was very bad, dark and greatly distended, especially at and above the seat of injury. There was considerable inflammation around the seat of injury. The rent in the gut was repaired and returned to abdomen. Patient made an uninterrupted recovery. I feel satisfied this patient would have died had surgical intervention been delayed 24 hours longer.



**Case No. 3.** R. M. was taken ill first with tonsilitis, later followed by an acute pain in abdomen with rigid muscles, constipation, etc. At this time he was seen by Dr. Richmond who made a diagnosis of ruptured appendix with general peritonitis. The abdomen was opened and the belly found full of a semi-purulent fluid. A drain was put in, the peritonitis continued, patient's obstruction becoming more and more acute. Patient was in an extreme condition at this time. Bowel was opened and drained. Patient began to get relief after this opening was made but had a stormy recovery as he had a general infection from his peritonitis. Later developed an empyema which required a rib resection. The artificial opening in the bowel was closed by the Coffey method. The patient entirely recovered and has had no further trouble.

**Case No. 4.** M. P., age 69: Carcinoma of cecum, the tumor in region of cæcum was discovered 1 year before I saw patient, by another surgeon who at that time thought it was a case of chronic appendicitis and advised repeatedly an operation. The patient declined and quit going to the Doctor. When he came to me, his abdomen was distended and he was suffering a great deal of pain as the obstruction was becoming marked. On examination, a large mass could be easily made out with probable diagnosis of carcinoma. He was sent to the hospital and the cecum and about 4 inches of ilium was resected and the colon was closed and an anastomosis made. The patient recovered nicely from this operation but about 8 months afterwards he began again to suffer from obstruction and the glands were all enlarged. A second operation was done, glands removed, an enterostomy was made. He is still living 8 months after operation but in a very weakened condition.

**Case No. 5.** J. Z. M., age 60, came to me from out of town. His physician, Dr. Luckett, had made a diagnosis of intestinal obstruction. We concurred in the diagnosis. Patient was suffering intense pain, having rhythmical contractions of intestines referred to umbilicus, pulse rapid, patient perspiring and collapsed, had passed no gas, no bowel movement, operation done at 1 o'clock at night. The appendix and gut were pushed into inguinal canal. There were a great many adhesions, bowel was reduced, appendix removed, patient making a rapid recovery. Dr. Cummings assisted with this case.

**Case No. 6.** W. M. Patient was suddenly seized with pain in abdomen. Referred to umbilical region, sub-normal temperature, vomiting, considerably distended, patient was taken to hospital, abdomen opened. An acute obstruction was found in ileum. The bowel was markedly distended above the obstruction and collapsed below. The foreign body which was probably underdone pieces of potato, was pushed through the constricted gut with a great deal of difficulty. Abdomen closed, the patient made a rapid recovery. This was a case of Dr. Craig's, who assisted me with the operation.

**Case No. 7.** R. H. B., 69 years of age, baggage man. Had an inguinal hernia for several years. Bladder had given trouble from time to time. Was taken seriously ill September 28th, suffered a great deal of pain. Patient was seen by Dr. King who diagnosed obstruction of the bowels, incarcerated in hernial sack. Patient was sent to hospital fourteen hours after onset of symptoms. Incision made over tumor, a large mass nearly the size of two fists was exposed. It was more or less firm on palpation, a tight constricting band as if it had been tied with a string was around the pedicle of the tumor. The band was released. In the mass was included a loop of bowel, which was very dark but faintly responded to the application of heat. On opening the mass the bladder was opened which was included in the hernia. The bladder was so much distended it looked almost like a large cyst. The gut was returned to the abdomen, bladder replaced in normal position, small drain put in, opening in bladder closed about two weeks after operation. There was no infection, the repair of the hernia was by first intention. Patient made complete recovery.

**Case No. 8.** Miss B., age 38 years, came to El Paso 10 years ago from east Texas suffering from ulceration of the stomach, as she thought. Was treated in El Paso for several years. At times improved and at others in bed, always having more or less distension of abdomen, with vomiting spells. During attacks she had persistent vomiting with extreme distension. She was operated on for a chronic obstruction, gradually becoming acute. There were numerous constrictions of the bowel found, some of them 6 to 8 inches in length. The patient died about ten days after operation. At autopsy there were found numerous constrictions almost throughout the entire small intestines, several in the colon. Some of them were so narrow you could scarcely insert the smallest probe. She had a diagnosis of pellagra before the operation. This case was referred to me by Dr. G. N. Thomas and I think there was no doubt but that it was obstruction due to pellagra.



## A DISCUSSION OF DIAGNOSIS AND TREATMENT OF INFANTILE LA GRIPPE

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BY

W. W. DILL, Albuquerque, N. M.

(Read before the Bernalillo, New Mexico, County Medical Society.)

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A great deal has been written, and many investigations carried out with reference to the gastro-intestinal complications incident to hot weather, with which the pathway of infancy is beset. Child welfare organizations, women's clubs, fresh air funds and pure milk depots in our large cities have done much to reduce this menace. I believe that the largest measure of success those agencies have accomplished has been through the education of the general public, which has been carried on in our great daily and weekly papers and magazines, but in our enthusiasm about the dangers to infant life incident to hot weather, and the gastro-intestinal tract, let us not overlook another great danger, which so far has not had nearly so much consideration from either laity or profession. I refer to the so-called grippal condition, which rages throughout the fall, winter, and spring, and, while it does not claim so many infants as the former, ranks second to it alone. I might state that what we have grown to consider as grippe is not the infection of the influenza baccillus, but rather it may be an infection of any one or all of the number of organisms. It may be staphylococcus, streptococcus, micrococcus, catarrhalis, and pneumococcus; all in combination, or any one singly. The infection may be limited at the beginning to any part of the respiratory tract; may subside or spread till the whole tract is involved. In other words, we use the term grippe as a blanket, which covers a multitude of conditions, and infections. In the mild cases in which the infection is limited to a small area, we seem to be applying a more presumptuous title to the common cold, while in the case which spreads from nose to throat, then chest, involves the glands in the neck, and the mediastinum perhaps sets up an endocarditis, or a myocarditis, a meningitis, or a nephritis; becomes a condition which warrants our deepest thought, and our profoundest respect. La grippe has been defined as an infection—catharrhal in character—which affects one or more divisions of the respiratory tract. La grippe is a disease that is epidemic and at times pandemic. We often read of grippe raging from Petrograd to Yokahoma, and go around either way we choose, this disease is carried by individuals. We are often the carriers. On questioning a mother about her baby who has the grippe as to the cause you will practically always find that the father, mother, one of the other children, or some one who has been

in contact with the baby has had the grippe, so that La Grippe may be regarded as a disease contracted by contact.

We encounter many cases in which the diagnosis is self evident; which the untutored laymen would recognize as readily as we, and which in fact the family and neighbors have made the diagnosis for us, and all that is wanted of us is a few suggestions as to the care and treatment. Then we find cases of a little sufferer lying in a semi-stupor, perhaps temperature of 103° to 105°, in which the throat is only slightly reddened, the chest clear as far as we can make out, the only thing we can find wrong is a little stuffiness in the nares. This condition may persist for a week or two, and, then end by either the temperature dropping and the baby clearing up, or by his making his exitus. This typhoidal type is not at all uncommon, and causes us a great deal of anxiety, as the diagnosis can only be made by a careful process of exclusion. We must interrogate the ears, kidneys, heart and central nervous system. Of course it is hardly probable that such a condition should exist without pulmonary involvement, but the examination of a baby's chest is often unsatisfactory, and considerable lesions are often overlooked by very careful men. The pathologist often finds conditions that the clinician did not dream of.

Vomiting often occurs as an initial symptom of La Grippe. The child vomits; not from a gastro intestinal disturbance, but from a toxæmia. This can be distinguished readily by two methods; first if a child is vomiting from a gastro intestinal disturbance he refuses nourishment; if from a toxæmia he may be hungry, and will take food only to lose it. And if the vomiting is from gastro intestinal irritation, 24 hours without food, and then a proper diet instituted, the food will be retained. With grippe gastro-intestinal symptoms continue. In the absence of gastro-intestinal lesions, as they are from toxæmia and not from lesions in the tract, they may be in the lungs, the kidneys or far removed from the stomach. The fever is variable from very high to subnormal in premature or feeble babies, who are suffering from a severe infection.

Grippe has many complications; among which are otitis media, retropharyngitis abscess, mastoiditis, encephalitis, meningitis, pneumonia, endocarditis, myocarditis, peritonitis, nephritis, pyelitis, and some mention appendicitis. As to this, I have never seen a case that I felt positive came from la grippe. The severity of the trouble varies with the temperament, and resistance of the individual baby. We all know babies who throw off all infection easily, others who seem seriously ill with the slightest ailment. The breast-fed baby always has a better chance than the bottle fed baby, and the baby over a year than the one under. The most far-reaching method of treatment is that of prophylaxis at seasons of the year when grippe is raging. It enters almost every household, and the affected one should keep himself or herself, as the case may be, as far as possible from the baby. This we might regard as special prophylaxis. The general prophylaxis consists in so looking after the baby as to harden him, build

up his resistance, so that he will throw off the infection, or if affected will only run a mild course. The baby should be kept out of doors as much as possible, should be given a cool sponge every day, and a rub; should be properly dressed, not too warm in summer, nor too cool in winter, nor according to stylish fads; in other words, his care should be guided by horse sense, which after all is a rare commodity.

The sick baby should be kept as quiet as possible in his crib or in his buggy; should not be taken out of doors, at least beyond the porch. As a general rule if they are running fever they should be kept in the house. If not in bed, should not be allowed to get down on the floor.

As to the medical treatment, don't over-treat, as Dr. Jacobi used to say, "don't do any harm." The nostrils may be cleansed with a weak solution of boric acid, or normal salt solution. If the temperature is high, a tepid bath or moist pack will give relief. Give all the liquids you can get the baby to take, and avoid physic as much as possible; knowing that physic will—if it does nothing else—disturb the stomach, and you must keep your little patient's nutrition up, or you will not have a leg to stand on. To relieve the temperature aspirin, phenacetin, antipyrin or aconite in very small doses give some relief. Expectorant cough mixtures should not be used. Opiates also should be left alone, except that paregoric will give some relief. We should remember that prevention is better than cure, and that careful and wise nursing are better than drugging.

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## THE NON-PASSIVE EXPIRATION THEORY OF BRONCHIAL ASTHMA

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BY

ORVILLE HARRY BROWN, M. D., Ph. D., Phoenix, Arizona

(Read before the 3rd Annual Meeting of the Medical and Surgical Association of the  
Southwest, El Paso, Texas.)

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The subject of asthma is trite and full of problems. Many theories have been advanced and many disconnected facts have been discovered. But asthma still remains an enigma. Is it the result of anaphylaxis? Is it a reflex from the nose? Is it due to vessel turgescence of the bronchial mucosa? Is muscle spasm the chief factor? Or is it purely and simply a neurosis? These and many others have been the all absorbing questions.

I became especially interested in the disease going on ten years ago. I have now arrived at some conclusions which I think harmonizes many of the diametrically opposed theories and explains many of the disconnected facts and makes of asthma a comparatively simple condition. My explanation makes use of the ordinary facts of physiology, anatomy and mechanics, but applied as not heretofore applied.



To refresh your memory on points that you may not recently have thought of I call your attention to the following:

(1). A Maxim Silencer used on a rifle for the purpose of cutting down the momentum of the gases and eliminating the noise from the firing of the rifle, is constructed so that there are many blind pockets for the gases to enter and leave before hitting the atmosphere.

(2). The bronchi down to the finer endings have comparatively firm walls, because of the cartilage and connective tissue in them.

(3). The bronchiole is a tubule less than one millimeter in diameter, and with walls composed of an extremely thin layer of muscle, and a flattened non-glandular non-ciliated endothelium.

(4). A bronchiole with respiratory bronchioles, atria, infundibula, and alveoli constitute the lobule, a sort of complicated Maxim Silencer or muffler construction, for air to wander about in on its way from the remote air cells to the bronchi, trachea and outside atmosphere.

(5). Nature has wisely provided that while inspiration takes place with muscular effort under all conditions, expiration is a passive process in normal breathing.

(6). If one blows gently through the muffler of an automobile or a Maxim silencer of a rifle, there is no apparent interference with the passing through of the air; but the gases from the engine or the rifle discharged under high pressure into the muffler or silencer, as the case may be, have their passing through greatly interfered with.

(7). Or to use another illustration, a large crowd in a theatre under normal conditions passes out through the exits without haste and without blocking the aisles and exits, whereas under great haste and excitement the crowd promptly blocks the aisles and doors and greatly hinders the emptying of the theatre.

(8). So when expiration is made an active process by bringing the strong abdominal muscles into use to expel the air from the lungs, the momentum of the air will be greatly decreased and the air tension within the alveoli will be much heightened.

(9). Under normal conditions the air tension within the alveoli during inspiration is slightly less than one atmosphere and during expiration is slightly greater than one atmosphere.

(10). During forceful expiration the air tension within the alveoli may be much more than one atmosphere while that within the firm walled bronchi remains approximately atmospheric.

(11). This increased pressure is applied to all structures within the chest and will affect all thin structures.

(12). The high tension tends to cause the thin walled bronchioles to collapse, and thus further hinders the exhalation.



(13). It strikes the pulmonary capillaries, dams the blood from them to the right heart, larger veins, and thence to the tributaries which have an external pressure of but one atmosphere. The redness of the face and the swelling of the neck veins during coughing paroxysms is evidence of this. The bronchial venules and capillaries being under approximately one atmosphere pressure even during the time of forceful expirations get their share of the dammed back blood.

(14). Since the pulmonary capillaries anastomose direct with the bronchial capillaries, blood is forced to the bronchial mucosa.

(15). The high alveolar pressure is applied also to the exterior of the bronchial vein and hence facilitates the damming of the blood of the bronchial vein and thence to the bronchial venules and capillaries.

(16). The pressure is also applied to the bronchial lymph duct, and the lymph is forced into the lymph spaces of the bronchial mucosa.

(17). The pressure applied to the pulmonary capillaries as well as damming the blood to the right heart forces it onward to the left heart and aorta and causes a rise of arterial blood pressure during expiration, and the higher the arterial pressure becomes the more blood will be pumped through the bronchial vein to the mucosa.

(18). Theoretically then, forceful expirations without assistance from inflammatory or anaphylactic swelling within the bronchi might produce sufficient passive congestion of the bronchial mucosa to greatly narrow the lumen of the bronchi. This has been done. Von Strubing in 1906 published a paper in which he stated that a number of his students in good health practiced prolonged forceful expirations for a time and developed signs of occluded bronchi.

(19). The common cause of forceful expirations is inflammation and irritation of some part of the respiratory tract.

(20). Any inflammatory or anaphylactic swelling or other narrowing of the bronchial mucosa, coupled with coughing, sneezing, dyspnoea, or hard breathing of any sort or source may result in such markedly narrowed lumen of the bronchi as to produce expiratory dyspnoea, loud piping rales and wheezes, an accumulation of mucus with pellets, shreds and bronchial casts, and emphysema. This is asthma, and so far as I can see arises in no other way.

To prove that my theory is correct I ask you to experiment but a little with the next asthmatic patient that you have. If he is just a little wheezy, without being in an attack, which is best for the purpose, apply your stethoscope to his chest. You will hear the loud wheeze characteristic of asthma. Without removing the stethoscope ask him to inhale very slowly and fully several times and to exhale as before. There will be no noticeable change in the sounds. Then ask him to inhale quickly and forcibly a num-

ber of times, exhaling as before. Some decrease in the intensity of the sounds may be evident. Then have him to continue inhaling quickly and fully, and to exhale very slowly, passively and easily. After a comparatively few breaths of this character the sounds will be pronouncedly decreased and may even disappear entirely.

After this have him to inhale slowly and easily and to exhale quickly, forcibly and completely. A very few breaths of this type will promptly bring back the characteristic noises. With each new breath you will hear dozens and dozens of little whistles joining in the medley, as though new bronchi were being converted with each breath into small fifes.

There is much other evidence supporting this theory; it has been presented elsewhere, and lack of time prevents its repetition here. I am also prevented from discussing treatment because of lack of time.

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## IMMUNITY IN TUBERCULOSIS

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BY

DAVID C. TWICHELL, M. D., Albuquerque, N. M.

(Read before the 3rd Annual Meeting of the Medical and Surgical Association of  
the Southwest, El Paso, Texas.)

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If by the term "immunity" we mean a specific response of the living organism to the tubercle bacillus to protect it from infection or to cure tuberculosis when established, then the title of my paper is a mis-nomer. Such a specific immunity has not been demonstrated clinically or experimentally in this disease.

The conclusions arrived at on immunity in tuberculosis from the experiments of Koch, Roemer, von Behring and Trudeau point to the truth of the fact that the organism which harbors living tubercle bacilli is to a certain degree protected from reinfection but this can hardly measure up to a specific immunity in any real sense.

What Zinsser<sup>1</sup> says of immunity in syphilis is apparently true if we substitute the word tuberculosis. By "immunity" in the ordinary sense, we mean an increased resistance to specific infection which persists for a more or less prolonged period after the active disease has been overcome and the causative agents removed from the body. It is not easy to draw conclusions concerning this point from observations on human beings, since it is most difficult to decide whether or not a given case is cured in the bacteriological sense; for tuberculosis is pre-eminently the disease in which there occur frequent and prolonged latent periods terminated, often after lapses of years, by the reappearance of foci of a grave nature. It is apparent that resistance to tuberculosis differs from that acquired in

many bacterial infections chiefly in the fact that it does not persist after the disease is over, but probably co-exists only with the presence of the living incitants in the body. Complete sterilization of the body is probably rare, possibly does not occur at all, and the apparent immunity to reinfection is an evidence of persistence of the disease in a latent form.

The theory of infection in childhood, with complete cure, leading to some degree of general immunity to reinfection in after life is indicated by certain clinical observations, but is as yet not proven experimentally. Lewis says: "My personal feeling is that localized tuberculosis in early life probably has little influence on the disease as it presents itself in adults. With bovine vaccination immunity as an influential factor seems not to persist much longer than do living bacilli introduced as a preventative."

As to acquired immunity by the employment of any known tuberculin product it can only be said that none such has been demonstrated. In fact, according to Austrian's experiments, animals previously treated with tuberculin were more susceptible to subsequent inoculations with living tubercle bacilli than were untreated control animals<sup>2</sup>. In the tuberculous animal the essential effect of tuberculin is the focal reaction or the inflammatory changes that take place in and about existing tuberculous foci. These inflammatory changes consist in congestion or if severe enough, necrosis and softening. Such a focal reaction, following a tuberculin reaction, establishes a better circulatory give and take between the tuberculous focus and the animal organism, and unlocks the focus. The resultant symptoms of a general reaction may be due merely, as Krause points out, to absorption of tissue products of the animal, either normal or pathologic, which are primarily toxic for the organism. Tuberculin is not specific in this action as physical strain, intercurrent disease, or certain drug action may produce circulatory conditions about the tuberculous focus that favor increased absorption.

Also tuberculin tolerance is by no means an immunity in the biological sense since so far as can be determined no antibodies to tuberculin are formed. In the face of tuberculin tolerance lesions may continue to exist and even to progress.

As to the phenomena of reactivity to products of the tubercle bacillus, infection and the presence of a tuberculous lesion seems necessary.

The defense of the organism against the tubercle bacillus would seem in no strict sense to be a specific immunity but rather a complex of its habitual defensive reactions. The organism offering one mechanism of defense after another to the invasion of the germ and its toxins.

The work of von Pirquet demonstrates the establishment of sensitiveness of skin and mucous membranes following the penetration of these membranes by living tubercle bacilli, either through immature or undeveloped epidermal layers or through fissures in these membranes. Such a development of sensitiveness does not necessarily denote a specific me-



chanism of immunity, as it is such a response as is uniformly called out by the invasion of a certain class of disease producing bacteria. Such reactions have been obtained with the extracts of the bodies of the infecting bacteria in such diseases as glanders, typhoid fever, syphilis and lobar pneumonia.

As Krause has lately demonstrated by animal experimentation cutaneous hypersensitiveness to tuberculo-protein is inaugurated by the establishment of infection and the development of the initial focus; that it increases with progressive disease; that it varies directly with the extent and intensity of the disease; that it diminishes with the healing of the disease; that it is probably never entirely lost (except in the presence of intercurrent disease, pregnancy, etc.); that it is increased by reinfection; that it is diminished or completely wiped out during the period of the general tuberculin reaction<sup>3</sup>.

Such sensitiveness may be the important factor in so-called "racial immunity." This mechanism of defense called into play frequently under civilized conditions of congestion of population with the resultant exposure to many bacterial diseases may become highly developed from this very circumstance. Such a mechanism, highly developed by frequent use, not specific but uniform, might tend to be transmitted.

The lymphatic gland defensive reaction to the invasion of the tubercle bacillus is parallel to such reaction with other bacteria. The different glandular groups, cervical, tracheobronchial and mesenteric act as more or less perfect, barriers to invasion.

As to the defensive properties of the blood here too a general germicidal reaction of varying degree has been demonstrated which includes the tubercle bacillus. The result of most intensive investigation has demonstrated that certain specific amboceptors exist in the blood of tuberculous subjects. Yet the attempted demonstration of the relation of such substances as precipitins, agglutinins and opsonins to the course of the disease has been most variable and contradictory. The history of the attempts at passive immunity is an instructive one along this line, as it has been one of extravagant claims later refuted by accurate study.

As to the strictly specific nature of the defensive reaction at the site of tubercle formation it is to be borne in mind that these local changes depend for their production upon two sets of agencies; first, the influence exerted by the tubercle bacillus *simply as a foreign body*, to stimulate the vital functions of the invaded organism and its proliferative capacity; second, the influence exerted by its toxins.

"The term tubercle tissue," as Delafield defines, "indicates a tissue formed under the influence of the tubercle bacillus rather than a tissue which is morphologically characteristic of tuberculosis in distinction from other forms of new tissue."

It has been demonstrated that chemical irritants injected into the lung produce an inflammatory reaction closely resembling an active tuberculous focus.

The present research into the field of local cell and tissue immunity in tuberculosis has not as yet yielded established results and conclusions.

The elimination of toxins becomes an important defensive reaction in the face of established tuberculous disease, associated with toxæmia. Here again the function of elimination takes place through the mechanism of the usual excretory channels, kidneys, alimentary canal and skin. Vaughn says of parenteral foreign protein in general; it may be eliminated through the kidneys; it may be passed into the alimentary canal and there digested; it may be digested parenterally.

In conclusion a practical clinical deduction might be drawn from the outline of this paper that in the acute phases of a tuberculosis, with symptoms of toxæmia more or less marked, more emphasis is indicated in treatment to the direct stimulation of all the excretory channels.

#### REFERENCES

- (1) Krause "Cutaneous Reaction to Tubercule-Protein." *Journal Medical Research*, September, 1916.
- (2) Zinsser "Immunity in Syphilis." *Journal of Laboratory and Clinical Medicine*, August, 1916.
- (3) Austrian. *John Hopkins Hospital Bull.* No. 24, II.

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## THE CLAGUE ELECTROLYTIC TREATMENT OF LEAD POISONING

BY

L. G. WITHERSPOON, A. M., M. D., El Paso, Texas

(Read before the El Paso County Medical Society, April 2, 1917.)

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I do not intend entering into the details of the etiology, pathology or symptomatology of lead poisoning, but will demonstrate to you the operation of this system, and report the results that we have had during the past year in the treatment of five cases which have come under our care.

Lead poisoning was much more prevalent formerly than today. Painters' colic and type setters' colic about 20 years ago were very frequent in occurrence, but owing to the change in the constituents of paint and the introduction and general use of the linotype machine, we have eliminated two of our greatest causes of such poisoning. Among the industries such as smelters, glass factories, etc., we still have some manifestations of the disease, but owing to the educational work which has been done through the establishing of welfare departments in practically all manufacturing industries, and the efforts they are making to protect their workmen from

the so-called industrial diseases, the element of danger has been reduced to a minimum. However it does occur in many of the best regulated and best managed manufacturing concerns where the employees are compelled to handle lead constantly, or work in its fumes.

In the methods of treatment of this condition, prior to the use of electricity, the principal was, that of elimination, working upon the basis that the lead contained in the body must be first dissolved and put into a form where it could be eliminated, either by the skin, kidneys or bowels. This method consisted of such eliminates as potassium iodide, magnesium sulphate, sulphur and hot baths. In addition to this the treatment given was simply for the amelioration or relief of the immediate symptoms; morphine for the colic and spasmodic pains, and bromides when we had to deal with encephalopathic or arthralgic manifestations. These methods were extremely slow in giving results, particularly so in the cases of chronic poisoning; which had resulted in chronic constipation, anemia, wrist drop and cerebral and joint manifestations. Months were required for the treatment and it was four to eight months before the blue line on the gums, wrist drop and anemia were relieved.

More than ten years ago Dr. H. L. Jones of St. Bartholomew's Hospital reported satisfactory results in the treatment of chronic lead poisoning through the use of the electric bath. The method which he used was that of putting the entire body of the patient in a bath, then charging the bath electrically. By this means of treatment he demonstrated that electricity was a valuable aid in the elimination of lead from the system, and while his results were more rapid than those obtained by the older methods of treatment, yet the process was very slow.

The method of treatment which we are now demonstrating is that which was perfected by Sir Thomas Oliver, of London, as suggested to him by T. M. Clague, chemist, also of London.

This system is simply an adaptation of the old principle of electrolysis as used in electroplating. When an electric current is passed through a solution of salt, the acid collects at the point where the wire comes in, and the base, which in this case is lead, goes to the negative pole. This same principle has been practiced for years as a method of introducing iodine and other drugs into the body.

Mr. Clague suggested that instead of immersing the patient's body in a bath, and then electrifying the bath the bi-polar system be adopted, placing the patient upon an insulated chair, with the feet in a basin containing salt solution, 15 grains to the pint, the hands in a similar basin connecting the positive pole of the current to the foot basin, and the negative pole to the hand basin. The voltage employed is 16, and from 20 to 40 minutes daily, or every second and third day, depending upon the severity of the case. In ordinary cases the treatment should be continued for a period of at least 25 days. If given as a method of prophylaxis for



those working constantly in lead, but having shown no symptoms, one treatment a week is sufficient. In severe cases, those showing wrist drop or encephalopathic symptoms, the treatment should be carried on for a period of 60 days or more. There is absolutely no discomfort to the patient during the treatment except a slight tingling sensation at the line of junction of the hands and feet with the salt solution.

Among the many experiments which Dr. Oliver reports, and which appear in the London "Lancet," was with a rabbit, as follows: "This animal a male, was given a solution of nitrate of lead dropped into the back of its mouth from a pipette. In the course of three years it received 1095 grains of lead. Some months after taking the drug the animal became painlessly paralyzed. It was treated electrolytically by the two-bath system, the fore feet being placed in one bath, the hind feet in the other, the positive pole being placed in the hind-foot bath, and the negative in the fore-foot bath. Under this method of treatment the animal recovered the use of its limbs. In a few days it was quite well again. The administration of lead was resumed, and in the course of nine or ten months the animal again lost the use of its limbs. Treatment by the double electric bath soon restored the rabbit to its former health and vigor."

The following is a brief record of the five cases which we have treated during the past year:

**Case No. 1.** Has been an employee in this plant for 5 years, previous to which he had never worked at any employment where he had contact with lead. During the past three years he has had three or four attacks of plumbism, which were manifested by colic, loss of appetite, vomiting and obstinate constipation. This patient had been treated for lead poisoning along the usual lines: elimination, catharsis, potassium iodide and tonics. When he reported for treatment the last time, he had the marked blue line on the gums, anemia and chronic constipation. He was given 8 treatments of 30 minutes duration, 25 mill-amperes. After the 5th treatment the blue line on the gums had disappeared, his bowels were moving regularly, and he returned to work, and only reported for 3 more treatments, giving the excuse later, that he was well, and there was no necessity for him to come for other treatments. We requested this man to come to the hospital for treatment for a period of 2 or 3 weeks, but he seemed to think that further treatment was unnecessary.

**Case No. 2.** This man worked at the furnaces, and had been coming to the hospital weekly during the past 3 years for purgatives and tonics. Was extremely anemic, and for the past 2 weeks had been unable to work on account of his weakened condition. Had the blue line on the gums, chronic constipation and anemia. He was given 8 treatments, after which he did not report to the hospital for about 3 weeks, when he came asking for medicine on account of a cold. When we asked him why he had not reported for treatment for his lead poisoning, he said he felt that he was cured; however, at this time he still had a slight blue line on the gums, but did not think he needed further treatment.

**Case No. 3.** Has been employed in lead smelters for the past 20 years: is a chronic alcoholic. For the past 5 months has been unable to work on account of pains in the joints, muscles and head, together with cerebral symptoms, which had been diagnosed as a case of brain tumor, and operation recommended. He gave all the above mentioned symptoms, together with the marked blue line on the gums, and the history of having worked for years in lead. After 18 treatments given daily, of 30 mill-amperes, 30 minutes duration, he did not report for treatment stating that he was entirely cured, and took a position in Mexico at his old work as a furnaceman.

**Case No. 4.** Has been in the employ of the smelter for 10 years, working at the furnaces. During the past 3 years we had treated him twice for lead poisoning by the usual methods of elimination. Three months prior to the commencement of this treatment he had a typical attack of epilepsy, being unconscious for 30 minutes. Since then he was unable to work. Had the blue line on the gums, chronic constipation, dizziness, extremely anemic, hemoglobin test of 70. The day he presented himself at the hospital for treatment, when this hæmoglobin test was made, he was given 2 ozs. of magnesium sulphate, and given his first electrolytic treatment. On the 5th day of his treatment the blue line from his gums, had entirely disappeared, and he reported that his bowels were moving regularly without purgatives. He came daily for treatment for 27 days. On the 25th day of treatment his hæmoglobin test was 80, he had gained 7 pounds in weight, and was apparently perfectly well.

**Case No. 5.** This man had been in the employ of lead smelters in Mexico for about 10 years. Had worked at our plant for 3 months, when he came to us, giving the following history: During the past 3 years he had had a number of epileptic seizures, which always came on at night, but with no regular periodicity: had no premonition as to when the attacks would occur, and had never had an attack while on duty. We advised that this man be discharged, on account of the possibility of his having such an attack while at his work. He had none of the positive symptoms of chronic lead poisoning, excepting his history of having worked in lead, having lost weight, and a marked appearance of anemia. He was given 35 treatments, of 35 minutes duration, 30 mill-amperes. After the first week of his treatment he voluntarily stated that he felt better than he had felt for 3 years. Since the commencement of his treatment, which was completed 5 months ago, he has gained 30 pounds in weight, and is now able to do a class of work which was utterly impossible for him at any time during the past three years: has not had an epileptic seizure since the beginning of this treatment. We do not claim that this treatment has cured his epilepsy, as we have not had enough experience yet with this treatment to know what it will do in cases of saturnine encephalopathy, but it is our opinion that this was a case where the elimination of the lead has relieved entirely the brain symptoms.

We are now using this treatment among all of our employees who are in any way exposed to lead, and who show any of the symptoms of lead poisoning, such as anemia, muscular weakness, chronic constipation and headache, with or without the blue line on the gums, which is so pathognomonic of lead intoxication. From our limited experience during the past year, we believe that the electrolytic system, used as a method of prophylaxis and treatment, is one of the most valuable adjuncts at our command in the treatment to combat this one type of industrial disease.

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## SOME RAMBLING THOUGHTS ON IDIOPATHIC EPILEPSY

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BY

EDWIN B. SHAW, A. M., M. D., Las Vegas, New Mexico

(Read before the 3rd Annual Meeting of the Medical and Surgical Association  
of the Southwest, El Paso, Texas, December 9, 1916.)

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Epilepsy has been known from the earliest period of antiquity. It is mentioned in mythology as the "sacred disease." The demigod, Hercules, because of his mortal birth, incurred the hatred of Juno, and was struck by the hand of Lyssa, daughter of Night, and personification of madness, with the "sacred disease" as described by Euripides in his tragedy, "The Phrenzy of Hercules." During an attack of this malady Hercules murder-

ed his wife, Ophelia, and his children, then fell into a profound sleep, but on awakening had no recollection of his horrible deed. This shows that the early Greeks recognized in the epileptic a tendency to do criminal and violent acts.

Hypocrates described the symptom-complex, constituting epilepsy, as closely and accurately as any of his followers. Lucretius, the Roman poet, described the disease in the first century B. C.

All modern epileptologists are agreed that the presence of epilepsy in any individual is practically always evidence of subnormality, yet history records a fairly goodly number of notable exceptions, among whom are St. Paul (?), Julius Cæsar, Peter the Great, Cromwell, Napoleon, Duke of Wellington, Lord Byron, Hamilton, the astronomer and mathematician, Mozart, Handel, Mendelsohn, and Swedenborg. Dana declares very emphatically that "true epilepsy is not compatible with extraordinary intellectual endowments." The geniuses mentioned above may have had symptomatic, but not idiopathic epilepsy.

The conception of the epilepsies, brought about by the profound study of such men as Shanahan, Munson, Spratling, Weeks, Peterson, and many others, has so enlarged our horizon, showing the disease to be so complex and many-sided, that it is indeed difficult, if not quite impossible, to give an adequate definition. Shanahan's definition meets best the modern conception: "Epilepsy may be defined as a symptom complex, chronic in nature, characterized by recurrent, abrupt attacks of impairment or loss of consciousness, with or without convulsive phenomena, and usually resulting in mental and oftentimes physical deterioration."

The time is too brief to go into the many phases of the subject with thoroughness, but I trust that I may bring out some points in etiology, prophylaxis, and especially in the general management of the disease, that may be of value. If so, I shall feel repaid for the time spent in going through the literature of the subject.

"The concensus of opinion today is that true epilepsy is indicative of a neuropathic family degeneration. There are often present other hereditary degenerative conditions, such as stammering, backwardness in walking and talking, delayed dentition, deafmutism, imbecility, etc."

The disease is essentially one of early life, eighty-five per cent of the cases appearing before the twentieth year of age. This establishes the fact that a defective inheritance influences adversely the developmental stage. True, a few cases develop late in life, but we generally find some cardio-vascular trouble with syphilis or alcohol as causative factors.

The etiology is still shrouded in semi-darkness, but recent studies are throwing light in the dark places. The theory of autointoxication as a cause has much to recommend it. The convulsions produced as a result of the exanthemata, acute infective diseases and other toxic states are often



regarded as manifestations of an acute epilepsy. So also an epilepsy may follow trauma.

Most practitioners regard such peripheral irritations as are produced by eye strain, diseased tonsils, adenoids, adherent prepuce, etc., as the starting point of many epilepsies. These causes are not adequate, except in those predisposed by a pschyco-neuropathic inheritance. However, in the management of a case of epilepsy all possible causes of irritation should be diligently sought after and removed if possible. A habit should not be allowed to develop. Hence, eclampsia in infancy due to such simple causes as dentition or gastro-intestinal irritation, should not be passed over lightly. Such children at least have unstable nervous systems, and should be under the guidance of the family physician for years.

I have mentioned trauma as a cause, but in the majority of cases it is but an incidence, else practically all of us would be epileptics. I feel very strongly that the fundamental cause is in some unknown brain cell defect, and that our hope in the future lies in the management of these cases in such a way as to prevent the actual outbreak of the symptoms by (1) the removal of all possible exciting causes; (2) by a proper dietary, and attention to every hygienic measure, such as fresh air, exercise in the open air, supervision of the educational and vocational methods employed; recreation and suitable amusements, and also by the exercise of firm discipline which is important in developing self-control. If these methods are carried out with the same earnestness and thoroughness as is done the world over in the management of tuberculosis, we may witness really brilliant results. As the tubercular can only be managed well in a sanatorium, so also the epileptic should be segregated if we are to have better results in the future than the past. The per centage of cures in the past was estimated at about four per cent.

The improved methods instituted at the Craig Colony show from seven per cent to ten per cent of cures. In view of the fact that many cases sent to the Colony were advanced ones, having been treated elsewhere for varying periods, it is indeed an encouraging showing.

The hope of cure in epilepsy, as in tuberculosis, is greatly enhanced when the cases are brought under proper treatment early. It seems to me the ideal place—the only place for the proper treatment of the epilepsies is in an institution or colony where there is constant medical supervision. After all, perhaps, it is not so much the *cure* of an epileptic that is sought after, as it is the providing of a place where he may be trained to do something useful, be happy and contented, and live out his life under pleasant surroundings, protected from harm and stress.

Epilepsy is a much more common disease than is generally supposed. Many of the mild cases, and the psychic equivalent ones are unrecognized for years. It is perhaps no exaggeration to say that there is one case in

every three hundred of the population. Calculating on that basis, there are 330,000 cases in the United States.

If epilepsy is ever to be blotted out, the prevention of marriage of the epileptics must be brought about. True, some of the States have enacted laws making it a crime for any one to marry an epileptic or defective, still as long as they are at large, they will marry and be given in marriage, and procreate their kind. The best solution of the problem is for each state to provide a colony or colonies for the segregation of all cases. The state owes it to their poor unfortunates as much as to the insane, deaf, dumb and blind. From an economic standpoint, it would be profitable, for about fifty per cent could be employed in useful trades, thereby turning back to the state a goodly share of the cost of maintenance. These cases are wholly unable to cope with their fellows in society and become a burden and a sore trial to their relatives, or else drift into vagrancy or crime. It has been shown that the epileptic criminals constitute ten per cent of the defective criminals.

Following down through the centuries we find that nothing was really done in a rational or humane way for the epileptics till comparatively recent years. Even death was meted out to these victims because of a misunderstanding of the ailment.

#### *Public Care of Epileptics*

There are now thirteen states that make provision for the care of these epileptics. The first special public institution for epileptics was established as recently as 1867 at Bielefeld in western Germany. This was called the Bethel Colony. In 1892 Ohio opened her institution at Gallipolis. From these beginnings the number has grown splendidly. Germany has fifty institutions having a special provision for epileptics. England has nine, Switzerland has three, Holland two, and Belgium also makes provision for epileptics. Australia has an institution.

The Craig Colony, located at Sonyea, New York, was established in 1892. It was so named in honor of Oscar Craig, President of State Board of Charities. This institution has perhaps done more to advance the study of epilepsy than any other agency. Dr. William P. Shanahan is the Superintendent and Dr. J. F. Munson the Resident Pathologist. These gentlemen are recognized authorities the world over, and have made of the institution a model from which others may copy with profit. The institution gives scholastic, manual and some physical training under direction of five teachers. Instruction in music is given by a resident band-master, there being a patient's band and patient's orchestra. Due attention is given to amusements, recreation and out-door sports. Fifty per cent are employed in useful and congenial occupations, and the remainder, owing to mental and physical defects due to the epilepsy, are unable to perform labor. That the segregation of epileptics in colonies is the ideal method

scarcely needs an argument to prove. Experience has shown that the inmates of the colony are happier and better contented than under any other environment. It is a strange, yet beautiful thing that there exists a strong bond of sympathy among epileptics. One epileptic will watch another through a seizure, safe-guarding and protecting him so far as possible.

Second only to the valuable work of the Craig Colony, is that of the National Association for the Study of Epilepsy and the Care and Treatment of Epileptics. This Association has carried on research work, as well as campaigns for the establishment of colonies in the various states.

I quote from a paper by Dr. Shanahan in which he summarizes the etiological factors as known today:

“(1). When epilepsy, feeble-mindedness, insanity, alcoholism, criminal tendencies, etc., are present in antecedents, a deleterious influence is brought on in a percentage of descendants, especially in the direct line.

“(2). This deleterious influence manifests itself, either by mental defectiveness, physical abnormality, or as one of the symptoms complex, such as epilepsy, insanity, etc., or what is more common, some combination of these conditions.

“(3). The distinctive influence of alcohol, syphilis, various infectious disorders, etc., on the central nervous system is unquestioned. These pave the way, often times, for epilepsy in the individual himself, as well as in his progeny.

“(4). The epilepsies are, as a whole, but evidence of the subnormal individuals.

“(5). While there are no positively confirmed facts available, it is a quite general consensus of opinion that the symptoms complex, epilepsy, is of a toxic origin. The cell changes in epilepsy lend much force to the opinion. Some disturbance in the normal relation between the various ductless glands and the rest of the human economy seems in some respects to offer a solution of the cause of the phenomena peculiar to epilepsy. The various changes found post-mortem in the central nervous system can be looked upon as but the results of the symptom complex, serving, perhaps to perpetuate some of the symptoms, *but not the actual cause of its development.*” (Italics mine.)

I take the liberty of making quotations from an interesting personal letter from Dr. Munson, of the Craig Colony, bearing on etiology and treatment. His letter sets a splendid example of open-mindedness. Too often writers twist the facts to confirm preconceived ideas. Dr. Munson says:

“I would suggest that you give especial attention to the epileptic personality. The presence in almost every case of psycho-genetic factors is becoming more evident every day. I have heretofore contended against



this view, but of late have come to find that such influences have a definite role to play—probably not the sole role in producing seizures, but at least an important one, and one which for therapy is of great importance. There is much of the psycho-genetic theory that I am not prepared as yet to admit, but there is undoubtedly an interesting relation between disturbing events in the patients' environment, and the occurrence of seizures. The epileptic cannot adapt himself properly to his environment, and his struggles to do this, and his failure to succeed are often followed by attacks. The ultimate psycho-sexual character of the epileptic is still extremely doubtful to me.

"The general management of a case is no longer a question of sedation. Where formerly, for a fewer number of patients, we bought a half a ton of bromides in a year, now we get along with about fifty pounds for more patients, and the same period of one year. Along with this marked reduction of bromide medication, the average of seizures has remained almost unchanged, except to be somewhat lower.

"Etiology is still an unknown matter. The inheritance of epilepsy, and the epileptic personality are being actively worked out, and beautiful family trees are being constructed, but the exact meaning of these researches is still not clear. In regard to the Reed bacillus, our work is at present too small to make definite statements, but our impressions are decidedly against such an infectious nature of the disease."

### *Pathology*

The real pathology of epilepsy is at present unknown. In all cases there is some inherited organic defect in the nervous system, the precise nature of which cannot be determined by our present means of research. The resulting instability renders the individual liable to symptomatic phenomena known as epilepsy. These phenomena are excited by causes which would not be operative with a stable nervous system, and when so excited would tend to recur.

### *Diagnosis*

The diagnosis of this malady is quite easy in the majority of cases, still in many cases of hysteria it requires months and even years of careful observation to make a satisfactory differentiation. Then, too, the mild and psychic epileptic equivalent cases require careful thought and observation to arrive at a correct diagnosis. Only by an early diagnosis, and a thorough appreciation of all the factors entering into the causation of the many-sided malady, can a cure or even an amelioration be looked forward to with any reasonable degree of hope.

### *Management*

Since only about two and one-half per cent of all cases of epilepsy in the United States are being treated in institutions and colonies, it is quite evident that a great responsibility devotes on the general practitioner

in the management of these cases. How best can he manage these cases? First, he should remember that it is a chronic disease, requiring a long period of treatment. This should be explained to the family, and their co-operation sought. As in tuberculosis, without the patient's and family's co-operation, little can be accomplished. No drug nor serum has yet cured a single case. Each individual should be studied—his family history should be gone into with great thoroughness. Discover all there is to be learned about his parents, grandparents, grand uncles and aunts, his cousins, his uncles and aunts. Search carefully for all possible exciting causes, such as have already been mentioned, and remove them if possible. These causes, if not actual factors in perpetuating the malady, at least act deleteriously on the general health, and their removal makes for an improvement in that particular. This is important, as the disease tends to produce physical, as well as mental deterioration. Bring about *good* hygiene in its broadest sense. This includes a dietary adapted to the individual's needs. Care of the bowels (there seems to be a tendency to constipation in the majority of the cases); care of the skin, which is an important, but too often neglected eliminative organ; out-door exercise and plenty of fresh air in the bedroom at night; mental training with the young to inhibit the tendency to deterioration. It has been found that out-door work, not too strenuous, brings about physical improvement. Certain cases need a nurse, or an interested attendant. Provide proper amusements and recreation. These cases should be treated at their homes where the physician may discover and correct errors in management. The seizures should be prevented so far as possible, but not by producing profound sedation as has been done in the past. That dangerous condition, status epilepticus, should be watched for and guarded against, so also other complications, such as œdema of the lungs and pneumonia should receive prompt attention. The drugs which have been used in the treatment of epilepsy are legion, yet but one is deserving of more than passing notice. True, certain drugs are useful in combating certain symptoms, and in the treating of complications, but the only ones which seem to exert any favorable influence in bringing about amelioration of the symptoms are the bromides. It is my belief that far more harm has been done by the use of bromides than any good accomplished. This has been because of excessive dosage. We have all witnessed the bad results of the large dosage of this drug—the dull, listless mind, coated tongue, foul breath, anorexia, acne, emaciation, faltering speech, tottering gait and failing strength. But notwithstanding these untoward symptoms produced by this drug, I still believe it has a place in therapy in certain well selected cases. However, the dose should be small, and given with a relatively salt-free diet. Much can be done along the lines of prophylaxis. Craig Colony statistics show that ten per cent of the cases have birth palsies. This calls for better obstetrics. The family physician should advise strongly against marriage. He should inform parents of the importance of not neglecting the eclampsias of childhood. Children with a

neuropathic taint should receive special care and attention. All possible causes of peripheral irritation should be removed. I believe that if the family physician manages his cases along these broad hygienic lines, that he will be fulfilling his duty to these poor unfortunates.

#### REFERENCES

- Nervous and Mental Diseases, Church-Peterson.  
 Text Book Nervous Diseases, Dana.  
 Reference Hand Book of the Medical Sciences, Buck.  
 System of Practical Therapeutics, Hare.  
 Tyson's Practice of Medicine, Sixth Edition.  
 Practical Pediatrics, McKee and Wells.  
 Twenty-second Annual Report Craig Colony for Epileptics.  
 Statistical Tables of Epileptic Institutions in U. S. and Canada.  
 Public and Private Care of Epileptics in the U. S. and Canada.  
 Illinois Medical Journal, October, 1914.  
 The Care and Treatment of Epileptics, Wm. P. Shanahan, M. D.  
 New York State Journal of Medicine, January, 1911.  
 The Medical Treatment of Epilepsy, Wm. P. Shanahan, M. D.  
 Therapeutic Gazette, March 15, 1912.  
 Acute Pulmonary Oedema as a Complication of Epileptic Seizure, Wm. P. Shanahan, M. D., New York Medical Journal, Jan. 11, 1908.  
 Syphilis as an Etiological Factor in Epilepsy, Wm. P. Shanahan, M. D., New York State Journal of Medicine, May, 1916.  
 A plea for a Moderate Conservation in the Care and Treatment of Epileptics, Dr. Wm. P. Shanahan.  
 The Treatment of Status Epilepticus, Wm. P. Shanahan, reprinted from the 1914 proceedings of the Association for the Study of Epilepsy, etc.  
 The Mentally Defective in Their Relation to the State, Wm. P. Shanahan, M. D.  
 Epilepsy and Other Chronic Convulsive Diseases, Gower.  
 End Results of Head Surgery in Epilepsy, J. F. Munson, M. D.  
 New York State Journal of Medicine, Nov., 1912.  
 Death in Epilepsy, J. F. Munson, M. D., Med. Record, Jan. 8, 1910.  
 Suprarenal Hemorrhage; An Unusual Cause of Sudden Death. From the Laboratory of the Craig Colony for Epileptics.  
 Autopsy Findings in Epileptics, J. F. Munson, M. D.  
 The Principles of Colony Building for the Defective Classes, William P. Spratling, M. D., Am. Journal of Insanity, Vol. LXI, No. 1, 1904.  
 Results of Brain Surgery in Epilepsy and Congenital Mental Defect, William P. Spratling, M. D.  
 Why the Marriage of Defectives Should Be Prevented When Possible, William T. Shanahan, M. D.  
 Some Phases of the Treatment of Epilepsy Which Should Be Given More Attention, Dietetic and Hygienic Gazette, Dec., 1910.  
 Recent Progress in the Treatment of Epilepsy. Wm. P. Spratling, M. D., Albany Med. Annals, Feb., 1908.  
 Epilepsy the Strangest Disease in Human History, Med. Record, Dec. 30, 1905.  
 Diagnosis and Treatment of Some Special Conditions Seen in Epileptics, Journal of the Medical Society of New York, 1911.  
 Syphilis in Epilepsy, New York Medical Journal, April 29, 1916.  
 President's Address, 1913, Craig Colony Asso.  
 Some Considerations Concerning Epilepsy.  
 What the Family Physician Can Do for His Epileptic Patients, J. F. Munson, M. D.  
 The Limited Value of Bromides in the Treatment of Epilepsy, Review of Reviews, July, 1916.  
 Hygiene of the Epileptic School Child, William T. Shanahan, M. D., Transactions Fourth International Congress on School Hygiene.  
 The Heart's Action Preceding an Epileptic Seizure, J. F. Munson, M. D. Transactions of the Nat. Asso. for the Study of Epilepsy, Vol. IV.  
 J. A. M. A., Oct. 9, 1916, p. 1088.  
 J. A. M. A., Oct. 14, 1916, p. 1155.  
 J. A. M. A., Oct. 14, 1916, p. 1152.  
 J. A. M. A., May 20, 1916, p. 1607.



- J. A. M. A., March 30, 1912.  
Practical Medical Series, 1905.  
J. A. M. A., March 30, 1912.  
J. A. M. A., March 29, 1913, p. 1034.  
Internat. Clinics, Vol. 4, 20 Series, p. 177.  
Amer. Medicine, 1904, p. 617.  
Amer. Medicine, 1904, p. 62.  
A. M. A., Dec. 7, 1912, p. 2098.  
A. M. A., Oct., 1912, p. 1478.  
A. M. A., March 27, 1913, p. 1001.  
A. M. A., May 13, 1913, p. 1380.  
Amer. Medicine, 1904, p. 65.  
Amer. Medicine, 1904, p. 721.  
Amer. Medicine, 1904 p. 949.  
Amer. Medicine, 1905, p. 242.  
Amer. Medicine, 1904, p. 833.  
Amer. Medicine, 1904, p. 1019.  
Amer. Medicine, 1903, p. 711.  
Clark and Prout, Am. Med. 1903, p. 306.  
Amer. Medicine, 1903, p. 53.  
Amer. Medicine, 1903, p. 241.  
Internat. Clinics, Vol. 1, 26 Series, p. 103.  
Internat. Clinics, Vol. 11, Series 26, p. 200.

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## HERPES ZOSTER OPHTHALMICUS, CASE REPORT

BY

A. D. WILSON, M. D., Medical Director, Prescott Cottage Sanatorium,  
Prescott, Arizona

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The following case is reported not on account of any new pathological findings or methods of treatment, but rather to give it a place in the literature where any one collecting a series of cases for study could avail themselves of it.

Herpes Zoster Ophthalmicus, or Zona Ophthalmica, commonly called Shingles, is an acute specific disease of the nervous system characterized by an eruption of vesicles upon inflamed bases, over the area supplied by branches of the ophthalmic, or first division of the trigeminal nerve. The branches usually affected are the supraorbital, supratrochlear, and lachrymal and, less frequently, the nasal. The inflammation which arises without any obvious peripheral or central cause, is located in either the trunk of the nerve itself or in the Gasserian ganglion, or in both nerve and ganglion.

That Herpes Ophthalmicus is a rare condition is asserted by Chance<sup>1</sup> who states that amongst 30,477 cases of all forms of diseases of the eye that came to the clinics of the Wills Hospital in the years 1913-1914 only five were cases of Zoster Ophthalmicus.

**Case History.** H. V. Z. Age 34, American. Well nourished man had been in sanatorium for three months with early tuberculosis. Has had chronic middle ear trouble for one year, both drums perforated and hearing about 50 per cent normal. Slight discharge from ears only at rare intervals. Some tendency to intermittent occlusion of nasal passages with flecks of blood expelled upon handkerchief in morning toilet. First complained of an irritating neuralgia involving the right side of

forehead and extending down toward the mastoid process. This became more severe and was followed by a crop of vesicles over right brow, forehead, scalp and edge of upper lid. The tip of the mastoid was specially tender and before the vesicles appeared gave rise to some apprehension of an acute mastoid condition.

During the period of vesiculation the patient was extremely sick and prostrated, with a foul breath and constant nausea. This peculiarly foul odor came suddenly and left completely a few days later when the patient had begun to improve. Temperature rose to 100°, pulse 120-130. The upper and lower lids were swollen and after the first or second day it was impossible to inspect the cornea. During the height of the infection a crop of pin point vesicles appeared upon the abdomen and back, these were not numerous, were irregularly placed and appeared upon a non-inflamed base. These disappeared, forming no crust. At this period the patient presented an appearance of an alarming infection and if it had not been for the positive diagnosis of herpes with its favorable prognosis, considerable apprehension would have been felt.

### *Treatment*

The pupils were dilated with a 1 per cent solution of atropine, cold compresses later changed to ice compresses were applied to relieve the swelling of the lid and the pressure on the globe. Sodium salicylate was given in free doses. Morphine was used to control pain and restlessness.

The acute condition lasted about one week, followed by a comparatively rapid convalescence. The cornea was not involved. Some pits remain at the present time over right brow.

### *Conclusions*

Herpes Zoster is an acute infection which can be differentiated from other acute conditions only by a vesiculation following well defined nerve routes. Ice compresses are indicated from the very first in Herpes Ophthalmicus to mitigate the odema of the lids and allow inspection and treatment of the cornea in case vesicles form in that locality.

In this case the nasal branch was not involved although at times there were slight twinges of pain radiating down the side of the nose. No vesicles followed. The consensus of opinion seems to be that in cases where the nasal branch is involved the cornea is much more apt to be involved.

(1) Herpes Zoster Ophthalmicus, Burton Chance, M. D. *Annals of Ophthalmology*, Oct., 1915.

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## EDITORIALS

### YOUR AGE! HOW OLD ARE YOU?

Never in the history of this country has this question been of such vital interest to so many people as it is today.

Never before has the United States Government been so deeply interested in knowing the exact ages of the young men of the land.

So that never before has the public mind been so ready to grasp the great importance of complete birth registration.

In ordinary times as the years go by and problem after problem is taken up and settled our civilization grows, growing ever more rapidly as they are taken up.

In ordinary times the continual demands upon our attention easily explain the temporary side-tracking in so many states of the problem of COMPLETE BIRTH REGISTRATION. It is not because the people believe it unimportant, but the problem has simply been crowded to one side until a more favorable day.

When the story is told of the American arrested in London as a German spy, unable to obtain a birth certificate because his birth had never been recorded and because the doctor had died, but finally saved by the discovery of an old letter which told of his birth, the people grasp the point and agree that births should be registered; but as the story relates to somebody far away, somebody unknown, and probably never heard of before, the point is soon forgotten and no wave of strong public opinion is ever really started. So too the statements that birth records are needed to prove men of voting age, to establish old age pensions and pensions for the children of soldiers, to establish rights of inheritance, to determine how efficiently the states are protecting the health of the children, and to determine who is entitled to the protection of OUR FLAG—these statements are too apt to be treated as old axioms which call for no immediate reform.

The need for complete birth registration is recognized, but the inertia of the people still prevails.

Thus in ordinary times the problems of civilization are settled slowly, but not so in time of war or after great catastrophes. Then the emergency or bitter experience brings quick results.



The city devastated by fire is so rebuilt as to guard against a second conflagration.

The terrible loss of life which follows overloading an excursion steamer soon results in more stringent laws and in greater safety for future travelers.

And today—this WAR CALL for the registration of our young men brings home the need of birth records to every community and to almost every family in the United States.

### *How Old Are You?*

Can you prove that you are under 21 or over 31, or must you forever be suspected of having falsified your age?

Perhaps a fond mother to save her son from the horrors of the trenches may swear that he is below the age limit; perhaps years later proof will be found that this man should have registered; imagine his chagrin at not having done his part in the WAR.

Perhaps there are slackers who in the absence of birth records may be able to shirk registration.

Surely on this day the need of complete birth registration is evident to all.

May we not hope that this call for the registration of all men between the ages of 21 and 31 will awaken the people from their lethargy and lead at once to this forward step in our civilization—the REGISTRATION OF EVERY BIRTH.

If you are interested and wish to know how to obtain better birth registration in your state write to the United States Census Bureau.

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“Hygiene is the art of preserving health; that is, of obtaining the most perfect action of body and mind during as long a period as is consistent with the laws of life.” So wrote a man who devoted all his adult life to the promotion of the public health and who died at the age of 56 of pulmonary tuberculosis. Edmund Alexander Parkes, born March 29, 1819, physician, surgeon, sanitarian and author left perhaps a greater impress on sanitary science than any Englishman of the nineteenth century. His work ranges from the theoretical consideration of the minutest details of chemical and physiological research to the practical consideration of the cleansing of a sewer or the lightening of the soldiers’ knapsack. India, the Crimea and London saw his labors and benefited thereby.

War brings some good things in its train. Just as the Napoleonic campaigns perfected the art of transporting the sick, and the loss of life from preventable disease in the Spanish war quickened the sanitary conscience of the American people, so the horrors of the Crimean campaign made Parkes a professor of military hygiene. He organized a complete course of instruction based on the principle that the student must be able

to apply practically the lessons which he learned. Many of the sanitary reforms which he inaugurated are now bearing fruit in the improvement of the well-being of the community at large.

Health is the efficient reaction of the mind and body to its environment. Self interest, state-benefit and pecuniary profit require that the whole nation be interested in the proper treatment of every one of its members and "in its own interest it has the right to see that the relations between individuals are not such as in any way to injure the well-being of the community at large." This is being realized in the United States today as never before, and on every hand the general government, the state and local health authorities and the general public are seen striving toward the accomplishment of this ideal.

No country, no race, no sex, no color is immune to tuberculosis. Similarly no tissue, no member, no portion of the human body is immune to its inroads. The catholicity of the disease, both as to people and tissues brings about strange results. Tuberculosis of a bone or a joint is very different in its manifestations from tuberculosis of the lungs, the skin or the brain. When some of the internal organs are attacked, for example, the suprarenal capsules, the consequences are even at wider variance from the commonly conceived picture of the devastations of that minute vegetable, the tubercle bacillus.

Thomas Addison, sprung from the English yeomanry of Cumberland, physician, teacher, student and diagnostic genius, carried on a series of observations for years before he found that tuberculosis was often at the root of the disease which now bears his name. Addison's disease, generally caused by tuberculosis of those little organs which lie just above the kidneys, is marked by extreme prostration, bloodlessness, a marked bronzing of the skin, and death. There may be other symptoms, but the weakness, anaemia and skin pigmentation are the most prominent.

The dogged determination which marked Addison's attempt to track a disease to its original source is the ruling spirit of 20th century medicine. No half-discovered fact will satisfy the modern investigator. The ultimate object is sought in its entirety by an industry of search, a correlation of scientifically deducted facts and a concentration of effort. Addison was born in April, 1793, and died of brain disease, June 29, 1860.

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A recent investigation of the causes and prevalence of miners' consumption among the metal miners in Southwestern Missouri forms the subject of Public Health Bulletin No. 85, issued by the U. S. Public Health Service.

Miners' consumption consists essentially of a mechanical injury to the lungs due to the prolonged inhalation of hard rock dust. It has been recognized as being prevalent in some American mining districts, particularly in the Joplin zinc and lead districts. It was to determine its actual prevalence, and its relationship to pulmonary tuberculosis that the investigation was undertaken.

In the Joplin district certain mines are known as "sheet-ground" mines, in which the ore is found imbedded in an exceedingly hard flint. In drilling and other mining operations this flint rock is finely pulverized. The minute rock dust particles enter the lungs, in the process of natural breathing, and by their irritating action

cause the formation of fibrous, or scar-like, tissue. The effect of this is to lessen the lungs' ability to expand and contract, with the result that the victim first notices that he is becoming short winded. With continued exposure to this silica containing dust, the difficulty of breathing increases, until the miner is no longer able to perform active physical labor. It was found also that men with dust injured lungs were especially liable to develop tuberculosis, the dust irritation lessening the ordinary resisting powers of the lungs. While miners' consumption is not in itself infectious or contagious, it predisposes to tuberculosis. The greater the amount of rock dust injury the greater the liability to tuberculosis, the far advanced cases of miners' consumption practically all become tuberculous before their death.

Under an entirely voluntary system 720 miners presented themselves for physical examination, of whom 433 were found to have had their lungs injured by the inhalation of rock dust; of these 103 were also tuberculous, the amount of tuberculosis infection being greatest among the advanced cases of the rock dust disease.

Five years steady work with exposure to flint dust is fairly certain to find the miner in at least the first stages of miners' consumption. If the miner continues his work after being affected, death usually results within ten years from the time that exposure to flint dust commenced. Poor housing conditions were found to be prevalent and to add to the liability of tuberculous infection. Apparently tuberculosis is now occurring at an earlier stage of miners' consumption than was formerly the case. The report lays emphasis on the necessity of preventing the spread of tuberculosis through these cases, especially among miners' children. The fact that miners' consumption is a forerunner of tuberculosis necessitates that it be treated with the same hygienic precautions as is the latter disease.

The report concludes that aside from the hygienic supervision of underground working places, the education of the miner against the spread of infection and supervision of miners' children, especially those of consumptive parents, are matters of vital importance.

The National Committee for Mental Hygiene has created a subcommittee on furnishing hospital units for nervous and mental disorders to the United States Government, the project having been approved by Surgeon General W. C. Gorgas of the U. S. Army.

This subcommittee, of which Dr. Pearce Bailey of New York is chairman, is authorized to secure the services of alienists and neurologists to be commissioned in the Officers' Reserve Corps, Medical Section, and to serve in the neuro-psychiatric units which are to be attached to the base and other hospitals of the military services of the United States. Further information will be given, and application forms sent to physicians qualified in this branch of medicine, on application by letter or in person to The National Committee for Mental Hygiene, 50 Union Square, New York City.

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## BOOK REVIEWS

### GUNSHOT INJURIES

By Col. A. Le Garde. 2nd Edition. W. Wood, New York. This is an extremely timely book, for our country's entrance into the world's war and the demand that needs must be met by the civilian medical man in filling up the proper surgical and medical quota of the army finds a place for a text, brief and pointed, on the injuries that occur in military service. Unfortunately Le Garde has not dealt with a phase of medical military service that the medical reserve officer needs must know, which is, the method of securing supplies, issuing them and accounting for them, each of which is a veritable red tape bugaboo to the but recent civilian practitioner. O'Reilly's in Vol. 4 of *Keen's Surgery* handles these questions at least amply enough to prepare one for instructions. The chapters of Le Garde's text covering Ballistics is wonderfully exact and illuminating, a phase of military surgery understood by few of the civilian medical men. The chapter dealing with abdominal military surgery is not complete. It deals with Otis' reports upon the Civil War, and the Franco-Prussian War; and Makins and Stevenson's Anglo-Boer War observations; Follenfant and Oetting's observations from the Russian side of the Japanese-Russian War. It also touches the Turkish-Balkan War, and of course the Spanish-American War, these last three bringing abdominal gunshot findings up to the conditions through quite similar armament, especially small-arm injuries to be found in the present world War. The first half of the chapter leads one to infer that an expectant treatment were best, while the opposite is the true consensus of opinion among German,



English and French surgeons. This, then, makes this chapter rather weak as a guide to the American military medical man. Poor abstracting of French, English and Central Powers medical military literature explains it.

The chapter upon bone surgery is equally weak upon recent military surgical practice. Too little modern literature reviewed, too much dependence upon Civil, Franco-Prussian, Anglo-Boer, Spanish-American, Japanese-Russian and Turkish-Balkan Wars conclusions. No feature of surgery has changed as much as bone surgery, particularly transplant work in recent fractures.

The chapter on the casualties of all armies except the Turkish in the present war up to July 31, 1916, is appalling; as to the world's man-power loss, this chapter is intensely interesting. On the whole, the book is well printed, well proof read, covers a world of detail and should be read by all civil and medical reserve men.

—H. C.

### THE NATION'S HEALTH, THE STAMPING OUT OF VENEREAL DISEASE

By Sir Malcolm Morris. Funk & Wagnalls. 1917, \$1.25.

The War has altered many ideas concerning things hitherto deemed "necessaries." Lust and drink, which become still more unlicensed in warfare, working ravages among troops and civilians, are no longer deemed "necessary evils" by those in the war zone, while scientists high in authority are collecting facts enough to damn all such traffic in the camps and to shame and scare the citizen. The old argument that a man cannot be made moral by Act of Parliament is riddled by accumulated evidence that removal of temptation inclines to the formation of habits which may eventually blossom into creeds.

Regardful of the "busy-ness" of men nowadays, Sir Malcolm Morris has concentrated his clear-headed diagnostic and prophylactic views into the covers of a small volume. The subject matter is as free as possible from medical verbiage which would confuse the lay mind, and every right-thinking man and woman will care to study it. It places before men, in an unmistakable way, the insistent need of a more open discussion of the prophylaxis and treatment of venereal disease, and the urgency of laws to control it. One argument is new: He says that to leave unchecked disease, which means sterility in both sexes, when countries are being depleted by war, is improvidence carried to its highest point; but the book is full of such well-directed appeals to common sense.

—W. R. J.

### A HANDBOOK OF PRACTICAL TREATMENT

By Many Writers. Vol. IV. The Newest Treatment

Edited by John H. Musser, Jr., B. S., M. D., and Thomas C. Kelly, I. A. M., M. D. W. B. Saunders, Philadelphia and London.

Although supplementary to the volumes previously issued, volume IV is a system of treatment within itself. Here one finds recent knowledge put into usable form. Vaccines and serums, the Schick reaction, the use of bismuth paste, blood transfusion, the intravenous use of vaccine in typhoid, artificial pneumothorax, serum and ethylhydrocuprein in pneumonia, in short the latest and best in treatments will be found in this volume. And what is refreshing is the absence of fruitless discussions, vague theorizing, and repetition of the ancient material used as padding for larger works. The articles without exception are characterized by their sanity. One feels safe in following such leaders as the Mayos, Barker, Sippy, Rountree, Goldthwait, Janeway, Hare, Gorgas, Bloodgood and Dercum.

James Henrie Lloyd writes the article on insanity and says of Freud's analysis of dreams: "There is an unlimited field here for pseudoscience."

John G. Clark says: "I cannot accept the extravagant assertions of Lane and his followers that the colon is the source of all evil and with its removal marvelous changes ensue." Still, colectomy is not entirely rejected.

Park and Krumwilde have an exceptionally good article on vaccines and sera, and while not so full of enthusiasm as the literature of those having mercenary interests, their conclusions will be a safe guide to those who wish to do good and at the same time refrain from doing harm. In fact one might venture to suggest that this volume might be well substituted for the optimistic "literature" furnished by the drug houses as to the latest and best in treatment.

—G. W.

## AUTOPLASTIC BONE SURGERY

By

Charles Davison, M. D. and Franklin Smith, M. D., 1916. 174 illus., Lea & Febiger, Philadelphia and New York.

Under the title, "Autoplastic Bone Surgery," is presented a volume of 369 pages, which is a general review of the newer bone surgery. It reviews the literature and gives briefly the results of experiments by the authors, but uses much more space for detailing clinical cases that illustrate indications for, and technique of operating. From all this is summarized the various methods and clinical uses which give the volume its greatest value.

Beginning with a brief statement regarding the laws of transplantation of bone, the authors pass on to the more complex subject of bone regeneration. They review the literature and discuss the subject as to whether periosteum regenerates bone, and in their conclusions rather neatly straddle the fence, albeit with experimental evidence to support the straddle. The anatomy and histology of healing of simple fractures, together with the histogenesis of ossification are given with a completeness that is gratifying.

Dr. Davison gives an extended list of indications for operation, and after mentioning the more important bone instruments, describes the operation of choice, often giving an illustrative case with accompanying drawings and roentgenograms. In general the volume gives one an idea of opposition to mechanical fixation devices, such as nailing, wiring and the use of Lane plates, preference being given to some form of autoplastic graft.

The volume is of timely value in weeding out and standardizing methods of real worth from the heterogenous mass of stuff that has been published in recent years in connection with bone surgery. —E. B. R.

**The Surgical Clinics of Chicago.** Volume I Number 2 (April 1917). Octavo of 221 pages, 83 illustrations. Philadelphia and London: W. B. Saunders Company. 1917. Published Bi-Monthly. Price per year: Paper, \$10.00; Cloth, \$14.00.

The April Surgical Clinics of Chicago, by a dozen of our old friends, is a volume on a par with others of this series. Among the more interesting clinics are those on splenectomy and blood transfusion, congenital dislocation of the hip, surgical lesions of the colon and removal of a bullet from the base of the skull through the mouth. Interesting points of technic are given in connection with wound closure, nerve blocking and the use of the Moynihan tube. Most of the clinics are on practical subjects, and we feel that clinicians realize that the surgeon, outside of the large medical centers, wants the redescription of important points connected with common subjects rather than clinics upon the rare conditions which, however interesting, most of us never see. —E. B. R.

By an error, the name of the publisher of Schafer's **Endocrine Organs** was omitted. Messrs. Longmans, Green and Co. published the volume.

## TEXAS NOTES AND NEWS

The Red Cross Fund subscribed in El Paso alone, \$100,000.00.

Dr. James Vance has returned from the East.

Dr. H. H. Stark, after spending some time in different Eastern cities and visiting the ophthalmic meetings, has returned.

Dr. J. G. Homes, of Alamogordo, was down for his examination for the medical reserve corps.

Dr. F. P. Miller made a trip down the T. P. in the interest of the Red Cross fund.

Dr. W. L. Brown and Dr. Jenness and their families have returned from two weeks' camping trip on the Ruidoso.

Dr. T. H. Dabney of Columbus, New Mexico, is away on his vacation.

Dr. Frank Brady, of Dawson, New Mexico, has enlisted in the medical reserve corps and was down taking his examination.

Dr. Thigpin and Dr. Davis, of the Cananea, Mexico, Mining Company's hospital were passing through El Paso on their way East.

Dr. H. T. Moore has gone to Old Mexico in the interest of the Guggenheims Smelter people.

Dr. W. R. Jamieson underwent an operation for appendicitis about the middle of June. He is now convalescing.

Dr. E. B. Rogers will spend his vacation in California.

Dr. H. E. Stevenson has been promoted from Major to Lieutenant Colonel in the line service of the Texas National Guard.

Dr. J. A. Rawlings and family have returned from their vacation spent in Mountain Park.

Dr. F. D. Garrett spent three weeks on the Ruidoso in the month of June catching fish.

Dr. E. H. Irvin has left for the east for three weeks on his annual vacation.

Dr. L. G. Witherspoon and Dr. D. H. Huffaker have been appointed by the Governor to serve on the El Paso County and City Exemption board.

Dr. E. S. White, of Ysleta, has been appointed on the exemption board for Hudspeth County.

Dr. Wilkerson, of Nacozaria, Mexico, passed through on his way to Albuquerque, where he will spend his vacation with his family.

Dr. T. J. McCamant has received a commission as Major and will organize a Field Hospital, which will be a part of the Texas National Guards.

Those that have enlisted under the colors up to date: Dr. L. G. Witherspoon, Dr. H. O. Darnall, Dr. Paul Gallagher, Dr. W. R. Jamieson, Dr. I. J. Bush, Dr. Joseph Hilton, Dr. T. J. McCamant.



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## THE ADMINISTRATION OF A BASE HOSPITAL

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BY

CRAIG R. SNYDER, Major, U. S. Army Medical Corps.

(Read before Arizona Medical Association, Douglas, April 18th, 1917.)

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The activities of the military establishment are divided in time of war, into a service of the theater of operations and a service of the interior or home territory; the theater of operations being again divided into: The zone of the advance and the zone of the line of communications.

The ambulance company and the field hospital operate in the zone of the advance, being at all times in touch with the troops they serve.

The base hospital, however, scarcely enters the theatre of operations, being found on the line of communications, usually as its name indicates, at the base of this line. Occasionally, however, when the base is far removed from the army in the zone of the advance, supplementary base hospitals may be established at suitable points along the line of communications. The number to be established is determined on the basis of the number of troops to be served and the percentage of sick and wounded, which may reasonably be anticipated in one particular campaign.

An old rule for the determination of casualties requires an estimation on a basis of 10% casualties in active campaign. Of this number 20% will be killed outright, the remainder will require the attention of the Medical Department. In addition to an estimate of casualties from wounds it is necessary to estimate the casualties from disease, which will depend upon the severity of the service, the healthfulness of the country in which the campaign is to be conducted; and whether or not the troops are well seasoned.

For an infantry division of some 20,000 men four field hospitals to shelter 216 patients each; two evacuation hospitals of 432 beds each; and one base hospital of 500 beds are provided by existing regulations. This makes a provision for a total of 2428 patients. It is to be remembered, however, that field hospitals have no beds in the usual acceptance of the term, when hospital beds are spoken of.

The sick and wounded coming into these hospitals are cared for on pallets of straw separated from the ground by rubber blankets.

As has been stated their function is to provide temporary shelter and care for the sick and wounded until the sanitary service of the line of communications can take charge of them, prompt evacuation being necessary in order that they may keep in touch with the troops to which they belong.

The evacuation hospitals are intended to replace field hospitals, and for this reason it is necessary that all serious cases requiring protracted treatment and those permanently incapacitated be sent further to the rear to the base hospitals.

The base hospital is the link between the evacuation hospital and the general hospital in the home territory.

The outflow of patients from the base hospital to the general hospital must keep pace with the influx from the sanitary units on the line of communications, otherwise the service of the base and evacuation hospitals and finally that of the field sanitary units will become clogged and ineffective.

All hospitals in the theater of operations except the base hospitals are provided with canvas shelters which they may use when suitable buildings are not available. No tentage is provided for the base hospital and it must be established in some civil hospital or other suitable buildings which may be available, or lacking these, temporary buildings will be constructed after plans on file in the Surgeon General's office.

These buildings are of simple construction and can be erected by ordinary builders with material which can be purchased in any market.

In the interest of simplicity a simple type has been adopted for all purposes, and the various buildings differ only in their interior arrangements. They are all one story frame structures with walls and ceilings finished in tongued and grooved beaded boards, heated by stoves and roofed with corrugated iron.

One story pavilions are preferred because of greater simplicity of construction and greater facility of heating and ventilating, and in case of fire the lesser risk to patients. Each ward consists of a building 120 ft. long, 26 ft. wide with ceiling 12 feet high, lighted by ten windows on each side.

When the plans are closely followed an annex is provided for each ward connected by a passage way to be used as a lavatory.

In the end of the ward nearest the annex is a room on either side. One for special diets, the other for office and linen room. The ward proper is 106 feet long and accommodates 26 beds, each patient having 106 feet of floor space and 1272 feet of cubic space.

The wards are heated by stoves (depending somewhat upon the climate), in others ventilating shafts of galvanized iron conduct fresh air under the floor to the stoves which are then surrounded by galvanized



iron jackets. For the removal of vitiated air ventilation shafts are provided through the ceiling and roof surrounding the smoke pipes.

The general arrangement and grouping of the pavilions vary greatly.

The wards may be set like divergent rays on the outer side of a covered way, shaped like a horse shoe, or they may be located on each side of a covered way on two sides of a square or rectangle.

The chief objects to be attained in determining the general plan are to give each ward a maximum of space, light, and sunshine; secure accessibility to all parts and convenience of service; and to provide open attractive grounds for the use of convalescents.

The cost of these pavilions is from \$1800 to \$2500 each, depending upon the local prices of lumber and labor.

When a base hospital is completed according to these plans it will have in addition to ward buildings, an operating pavilion, nurses quarters, quarters for enlisted men and officers, store rooms, wards for contagious diseases suitably located, an administration building, in fact, all of the departments found in large civil hospitals.

The equipment of base hospitals is similar to that of any large modern hospital. It has well equipped operating rooms, with sterilizing outfits heated by gas or oil. Modern X-Ray machines are installed and in the wards white enameled hospital beds with hair mattresses are provided.

The personnel of a base hospital consists of twenty medical officers, one hundred and fifty-two enlisted attendants which includes in addition two ward attendants, cooks and cooks' assistants, operating room attendants, laboratory assistants, dispensary clerks, men employed in store rooms, etc. Forty-six female nurses complete the personnel.

The senior medical officer on duty is termed the Commanding officer.

He is responsible for the proper care of patients, for the discipline, instruction, equipment and general efficiency of his command.

Much of the work done in a large hospital is necessarily of an administrative character. Medical officers are therefore required to assume certain of these administrative duties in addition to their professional work.

For example, one officer will have charge of the correspondence and the various duty rosters, and will communicate the orders of the commanding officer to all persons on duty in the hospital.

One medical officer will act as Registrar, having charge of medical and surgical records, requiring that careful histories be prepared and preserved in order that all claims for pensions may be adjudicated with justice to the Government and the individual.

Another officer is made accountable for all government property used in the hospital which pertains to the quartermaster, ordnance and medical departments.

He also has to do with means of transportation, disinfection and refrigeration plants, and with shops and store rooms.

One medical officer acts as mess officer. He has charge of all diets served to patients and of the mess, of the attendants on duty under the direction of the commanding officer; he spends the hospital fund which accrues from the commutation of the sick in hospital and from other sources.

The enlisted men of the medical department on duty form a detachment and it is necessary that a medical officer be given command of them; being responsible for the proper keeping of their accounts and records and for their discipline, instruction, equipment and quartering.

Civilian physicians called to serve in time of war would probably find this administration work connected with base hospitals irksome and disagreeable. For this reason it would probably be desirable that this work should be done for a time, at least, by medical officers who are instructed in it, the physicians called to the colors from civil life being employed in strictly professional work with which they would be perfectly familiar.

The professional service of the hospital is usually divided into a medical and surgical section with one medical officer in charge of each.

These chiefs of services are responsible to the commanding officer for the proper administration of their sections. They will assign ward officers to duty and consult and advise them when necessary.

Other officers having professional duties in a base hospital are:

One as Roentgenologist.

One in charge of eye, ear, nose, and throat work.

One as Pathologist, in charge of the chemical, bacteriological and pathological laboratory.

One or more Dental surgeons.

It is stated that in time of war the American National Red Cross Secretary is to be depended upon to furnish 25% of the officers, 25% of the ward attendants and 75% of the female nurses. It seems probable that a much larger percentage than this must be furnished from outside sources. In fact, in the last two years, the Red Cross has organized base hospital units in some of our large cities, the equipment to be used having been purchased for some of these units and is stored and is in readiness for immediate use.

It is planned that the personnel for these base hospitals be drawn complete from the civil hospital which organized the unit.

The value of this measure of medical preparedness will doubtless soon be thoroughly tested.

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THE AMBULANCE COMPANY

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BY

W. H. ALLEN, Captain, Medical Corps, U. S. Army, Commanding Ambulance  
Company No. 2.

(Read before Arizona Medical Association Meeting, Douglas, Arizona, April 18th, 1917.)

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The ambulance company owes its inception, as do practically all the modern methods for the evacuation of the wounded, to the genius of Jonathan Letterman, Medical Director of the Army of the Potomac under McClellan during the Civil War. The deplorable condition of the wounded following the first battle of Bull Run lead to earnest efforts on the part of the Medical Department to devise efficient methods for their prompt evacuation and care following action. Letterman devised and, after many difficulties and much opposition on the part of certain authorities, secured the adoption of a comprehensive system, which with few modifications is now in use by the sanitary service of all modern armies.

The functions of the ambulance company are three-fold: first, to furnish ambulance service in camp and on the march; second, to transport the wounded from the regimental first aid stations, and where necessary from the firing line itself to the field hospitals, and, third, to render such aid as will enable the slightly wounded to return to the firing line and the more seriously wounded to be transported to the rear.

Under the third heading the care of the slightly wounded is mentioned first advisedly. The primary function of armies is to win battles and the paramount duty of the sanitary service is to aid the combatant troops in this function by instituting and carrying out such sanitary measures as will prevent the depletion of their ranks by disease, by securing the prompt return of the sick and wounded to their duties, and by the prompt evacuation of the non-effectives to the rear that the combatant forces may not have their movements embarrassed and their morale impaired by their presence. The knowledge that prompt and efficient care and transportation will be his lot in case he is wounded means much in sustaining the morale of the fighting man. The disabled man is, at best, a temporary loss to the forces in action, and his care, while appealing to our humanitarian instincts as medical men, must await that of the slightly wounded man who may be returned immediately to his place in the line.

The infantry division, which is the great administrative and tactical unit of modern armies, consists in our army of three brigades of three regiments of infantry each, a brigade of two regiments of field artillery, a regiment of cavalry, a battalion each of engineers and signal troops, a



sanitary train of four ambulance companies and three field hospitals, and ammunition, engineer and supply trains. It aggregates in round numbers 23,000 men of all arms and branches. The cavalry division has three ambulance companies.

The personnel of an ambulance company consists of one captain, four lieutenants, two sergeants first class, seven sergeants, one horseshoer, one mechanic, one saddler, one farrier, two cooks and sixty-eight privates first class and privates. These are organized into a bearer detachment, a pack detachment, an ambulance detachment, and a wagon detachment. The bearer detachment is further subdivided into four platoons of four little squads each and the ambulance detachment into three platoons of four ambulances each.

The companies of a division are under the command and supervision of an officer of the rank of major, known as the Director of Ambulance Companies. He, in turn, receives his orders from the Division Surgeon. His relations to the companies are, in general, similar to those of a major of the line to his battalion.

The transportation in the case of an animal drawn company comprises four pack mules to carry the dressing station equipment, twelve ambulances, and three escort wagons. The first wagon is known as the combat wagon and carries additional supplies for the dressing station, a reserve of surgical dressings to replenish those used by the dressing and regimental first aid stations and, on the march, 20 litters for the use of the bearer detachment. The second wagon is the baggage wagon. It carries the company baggage, supplies and equipment for the horseshoer, farrier, saddler, and mechanic, the 50 lbs. of baggage allowed to each officer, and, when practicable, the blanket rolls of the enlisted men. The third or ration wagon carries two day's field and one day's reserve rations for the men and two day's grain rations for the animals.

The organization and transportation of a motor company is still in the experimental stage but the transportation at present assigned comprises one light touring car for the officers, twelve motor ambulances, one spare parts car, and two 1½ ton motor trucks. The question of the method of transporting the dressing station equipment is yet undecided. My personal belief is that it should be carried by four motorcycles with side car attachment similar to those in use for package delivery, the contents of each to be packed in four knapsacks in order that it may be transported on the backs of the men when the terrain or the conditions are of such a character as to preclude the approach of the motorcycles to the site of the dressing station. Recommendation to this effect has been made to the Surgeon General.

On the march when not in the presence of the enemy, the ambulances are distributed amongst the regiments of the division and transport those who are unable to march. In camp, when practicable, the ambulances re-

join their companies and are parked with the grouped sanitary train. They also furnish the ambulance service for the camp. The wagons carrying the equipment for the camp infirmaries are ordinarily attached to them.

In the presence of the enemy one ambulance company will ordinarily march in the rear of the advance guard while the remaining three will be grouped with the remainder of the sanitary train.

When the combat is imminent the dressing station parties, comprising the bearer and pack detachments, move up in rear of the combatant troops to which they may be assigned. Ordinarily one company is attached to each brigade. The trains, consisting of the ambulance and wagon detachments, are placed immediately in rear of the ammunition trains.

As the action develops, orders are issued by the Division Surgeon through the Director of Ambulance Companies or, when authorized or in emergency, by the latter officer for the establishment of as many dressing stations as are required.

The dressing stations are established as far forward as possible without unduly exposing them to the fire of the enemy. Their location will vary with the character of the terrain and the facilities for shelter, cover, water and evacuation of the wounded. For purposes of discussion it may be assumed that ordinarily they will be located within a mile from the firing line.

The equipment of a dressing station is carried on four pack mules. It consists of: a medical and surgical chest, containing instruments and supplies for emergency operations, a few medicines in the form of tablets and a liberal supply of morphine and stimulants; a box of miscellaneous supplies, such as Red Cross guidons for marking the route from the front to the dressing station, lanterns for use by bearers in searching for the wounded at night, denatured alcohol for stoves, lanterns and candles for lighting the dressing station, basins, etc.; two boxes of surgical supplies, containing first aid packets, compressed bandages, gauze and cotton, splints etc.; and two food boxes, containing beef extract, tinned soup, condensed milk, cocoa, tea, coffee, etc., a bucket, alcohol stove and large stirring spoon; buckets; bags for carrying water; and two tent flies for use when no shelter is available. As before noted, the combat wagon carries a large reserve of supplies and a liberal number of oil lanterns as well as a flag pole with national and Red Cross flags for marking the station.

On its establishment, the bearer detachment with their litters and personal equipment for rendering first aid are sent forward under the direction of a medical officer to clear the wounded from the first aid stations, established by the regimental sanitary detachments, and, when necessary, from the front itself. They are instructed to mark the route to the dressing station with the Red Cross guidons for the guidance of the slightly wounded, to direct the ambulant patients to it and to transport those unable to walk. They will apply first aid and attach diagnosis tags to those

who have not already received attention. The dead are also tagged for purposes of record and to avoid loss of time in further examination by subsequent parties. The bearer detachment is ordinarily divided into as many sections as there are aid stations, each under the command of a non-commissioned officer.

On its establishment, the dressing station is divided into the following departments: receiving and forwarding, slightly wounded, seriously wounded, dispensary and kitchen.

It is well to establish the receiving and forwarding department a short distance in advance of the other departments in order that the necessary sorting of the wounded may be accomplished before they reach the other departments and disorganize them. For the same reason the department for slightly wounded, if possible, should be placed in advance of that for seriously wounded. If this be not done the latter department will be flooded with the slightly wounded who always arrive before those requiring transportation.

All wounded pass through the receiving and forwarding department where a rigorous division and selection of cases must be carried out. This sorting continues through all establishments of the sanitary service to the end that the slightly wounded may be returned to the front with the least practicable delay and the seriously wounded receive as prompt treatment and evacuation as passible. Those able to return to the front will receive treatment and be directed forward as soon as possible, a notation to that effect being made on their diagnosis tags, while the ambulant cases unable to do so will be dressed, gathered in parties, and sent to the rear under the direction of the highest officer or soldier amongst them. They will generally be directed to the station for the slightly wounded. A memorandum of the number and disposition of the cases will be kept at the receiving and forwarding department and the required list of sick and wounded made out.

The seriously wounded are treated in the department for that purpose. Emergency operations only will be performed, such as ligations, tracheotomies, etc. The character of the treatment given will depend upon the number of the wounded and other circumstances but is ordinarily only of such a character as will prepare the wounded for further transportation. A liberal use of morphine and administration of hot liquid food is ordinarily indicated.

The ambulance train and wagons, which have been left behind, are usually held in the vicinity of the nearest field hospital, some four or five miles in the rear. These should be sent for and brought up at the earliest possible moment to clear the dressing station. Under modern battle conditions, in which the enemy covers every avenue of approach from the rear with a hail of shells to prevent the bringing forward of



supplies, this may be delayed for long periods and ordinarily will be possible only under cover of darkness.

Under favorable conditions, such as a retreat of the enemy, it may be possible for the ambulances to clear directly from the field of battle, thus obviating the transportation by litter bearers. Under these circumstances, the dressing station and, if possible, the field hospital may be established at that point. It should be the practice, as far as possible, to transport the sanitary formation to the patient rather than the reverse.

The army ambulance furnishes accommodation for eight sitting or four recumbent patients. The train of an ambulance company will thus furnish accommodations for 96 sitting or 48 recumbent patients at each trip. When the ambulance accommodations are insufficient for the casualties application may be made to the division commander for the use of all empty transportation returning from the front. Little dependence can be placed on this mode of conveyance, however, as it will be impossible to divert them in the slightest from their course back to their points of ammunition and other supply. As soon as a field hospital is established, its seven wagons or trucks may be placed at the disposal of the ambulance train. Civilian transportation will be impressed and gathered into trains prior to or during an engagement and be used to supplement the ambulance train.

When time permits, a list of the wounded should be turned over to the officer in charge of the train. A special notation of those wounded likely to require attention or die en route to the field hospital should be made on this list. If impracticable to furnish this list at the dressing station, an endeavor should be made to prepare it en route and a copy turned over to the field hospital.

Each ambulance carries a supply of surgical dressings and food of the same character as those at the dressing station. These are intended for the use of the wounded en route should there be delay or a long trip but in emergency they may be turned over to the dressing station.

In transportation it is important that the wounded should be handled as little as possible. With this end in view no patient should be removed from a litter after having once been placed on it, before reaching the field hospital. Delay and discomfort to the patient will be reduced by turning the litter into the field hospital and securing an empty one for it from that formation. The litter is placed on supports and used as a dressing and operating table at the dressing station. Each ambulance carries four litters as part of its equipment and there are twenty additional litters on the combat wagon for the use of the bearer detachment, making a total of sixty-eight litters for each company.

The weakest link in the chain of transportation is that between the aid station and the dressing station. The present organization of our army provides for only sixteen litter squads of two bearers each. This is entirely insufficient and is far below the quota allowed in other armies.

In practical work it is found to be impracticable for two men to carry a patient on a litter for any distance. To remedy this defect an increase in personnel of the ambulance company to 150 men in the case of an animal drawn company and 125 in a motor company is under consideration. The latter number has been fixed as the maximum personnel that can be transported in the motor vehicles on the march.

To give an approximate idea of the work devolving on an ambulance company in combat the following figures based on the experience of previous wars may be cited. These figures are the ones ordinarily employed in the solution of sanitary problems and are subject to wide modification in actual practice. The experience of the present war has tended to increase the ratio of dead to wounded and of seriously wounded to slightly wounded as the result of the great increase in use and efficiency of artillery fire.

Approximate strength of a brigade: 6000.

10 per cent casualties .....	600
20 per cent killed .....	120
8 per cent seriously wounded .....	48
32 per cent wounded requiring transportation.....	192
40 per cent wounded able to walk .....	240

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Total wounded .....480

It will thus be seen that a tremendous and in certain cases an overwhelming amount of work will devolve upon the personnel and transportation of an ambulance company following a battle. To provide for emergencies, the sanitary personnel of unengaged troops may be temporarily assigned to assist that of the ambulance companies actively engaged.

No attempt can be made in the brief space of this paper to cover the multiplicity of details covering the administration, supply and training of a company. The outlines of these are laid down in the Army Regulations, Manual of the Medical Department and other official and unofficial publications but can be mastered only by practical experience with a company. It is to be feared that in the organization and training of the new armies that many of our confreres in civil life, who will now join us, will have a stony path to follow before they and their companies will be able to render that service to the wounded and to the Nation which is their due. We can find encouragement and guidance, however, in the example of our ally, Great Britain, who has successfully overcome in this war the same difficulties which now confront us and much can be gained by a careful study of the papers now available concerning the work of our brothers-in-arms, the Royal Army Medical Corps, as well as those by our own officers. In this connection I most earnestly urge that you give your time to a study of the official publications mentioned, The Military Surgeon, the foreign correspondence in the medical journals and, if available, The Journal of the Royal Army Medical Corps.

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CLINICAL FEATURES OF LABYRINTHITIS

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BY

E. R. CARPENTER, M. D., El Paso, Texas.

(Read before the El Paso County Medical Society, May 7th, 1917.)

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Whenever a patient states that he is dizzy, or has dizzy spells, the physician should at once think of disease of the vestibular apparatus and should satisfy himself that the dizziness is or is not directly from that source. At times, the neurologist or the otologist may be needed to decide the question, but as a rule, a few well directed questions should determine the necessity of further investigation.

First: Inquire if the patient has at any time had a discharge from the ears, and whether or not it entirely healed.

Second: Inquire carefully as to any specific history. (Syphilis and tuberculosis.)

Third: Look for signs of facial paralysis, deafness or even internal strabismus. Test the equilibrium and the usual deep reflexes.

If your findings are negative all the way through, you may rest reasonably certain that the dizziness comes indirectly from some other source. However, any suspicion that the trouble originates in the vestibular apparatus, including the semi-circular canals, the nerve trunk, or in the basilar centers, must be thoroughly investigated.

The importance of a discharging ear in this connection must not be underestimated. A discharging ear with partial or total deafness, may be just as dangerous as one associated with vertigo, but as we always have varying degrees of deafness with an otorrhea, we are not prone to consider the deafness alone so seriously.

The association of vertigo with acute middle ear disease does not give us great concern, as the disturbance usually passes away after a good paracentesis has been made, or at least, after the acute mastoid operation has been performed. Vertigo with acute middle ear infection may be caused from a banking up of the secretions against the oval and round window, or it may be from a more or less diffuse inflammatory swelling in the wall of the labyrinth, causing pressure or irritation to the nerve endings in the labyrinth. As stated, the relief of pressure and the subsidence of the active process usually results in restoration of the normal condition.



It is not unusual to meet with vertigo and spontaneous nystagmus following the radical mastoid operation, without previous labyrinth symptoms, all due to irritation to the labyrinth wall, while operating. This also usually subsides in a few days. At no time, in the cases under consideration, does the hearing power entirely disappear, that is, destruction to the nerve endings in the labyrinth but seldom occurs here.

Now, let us consider vertigo with a chronically suppurating middle ear. The patient states that he has had a discharge for years, at times less than others. There is a bad odor and more or less deafness all the time. He may or may not give a history of having had mastoid disease. Suddenly, he began having dizzy spells, everything would turn around in front of him. Perhaps for a few moments or even hours, he could not continue his work. His stomach troubled him and he felt very sick. These spells became more frequent and finally he consults the oculist who finds the following well known conditions: No pain or tenderness over the mastoid; scanty, thick or dried pus in the canal; drum either gone, or there is a large perforation through which a whitish material can be seen, and upon examination proves to be a cholesteatoma, extending into the attic and antrum or, perhaps, in place of the cholesteatoma, only slight indications of pus can be made out coming from the attic. The hearing may be very poor, or absent. The eyes are examined for voluntary nystagmus which if present, shows a short, quick movement of the eyeballs toward the well ear, when the patient looks straight forward. The vestibular reaction is then tested by syringing the ear out with preferably cold water at about 70 degrees Fahr. If the nerve endings are still active, the patient will feel dizzy when about a pint of water has slowly flowed against the wall of the middle ear. At the same time, an active nystagmus can be seen, the quick movements being toward the well ear, as the patient looks ahead. In case the nerve endings have been seriously damaged or destroyed, of course, there is but little or no vertigo or nystagmus from the stimulating test. Revolving the patient in a chair, and applying the galvanic current, may also be employed to test the vestibular nerve endings.

Experience has taught us the necessity of a routine examination in all chronically discharging ears. It is only by making the tests that we can intelligently deal with labyrinthitis, which may appear as a complication without gross symptoms. We have learned that the absolute loss of hearing associated with a discharging ear and with but little or no response to the caloric tests, should not only have a radical mastoid operation, but also drainage of the labyrinth itself, as the majority of these cases end with brain abscess or meningitis. We know when even a slight amount of hearing is obtained with or without response to the caloric test, it is not advisable to enter the labyrinth at once, as the process is more or less circumscribed and not necessarily dangerous, although in all such suppur-

ating ear cases with vertigo and spontaneous nystagmus, the radical mastoid operation should be made, in order to give Nature a better chance to heal the damaged structures.

In all patients, with impaired hearing and vertigo, whether he has an otorrhea or not, a thorough investigation as to syphilis should be made, as this disease is responsible for many of our labyrinth cases. Although, in syphilis the symptoms may be identical to the symptoms in non-specific cases, the treatment is radically different.

Vertigo and nystagmus, the prime symptoms of vestibular disturbance, can not be gone into in this brief article, but attention is called to the importance of making a very complete examination as to the sources of the symptoms, whenever met with. They constitute a very efficient sentry system for the brain. The disturbance may be the onset of some grave nervous disease, it may be a brain tumor located in any region, it may be a circulatory disease, it may be an irritation to the various nerve endings for the eye, the ear, the stomach, or to any other organ, or, it may be a toxine, being liberated from some remote part of the body.

I have directed attention to the vestibular irritation other than of labyrinthian source, in order that the association of labyrinth disease may never be lost sight of in dealing with patients exhibiting either vertigo, nausea and vomiting, disturbance of equilibrium, deafness, obscure persistent headaches, or even a general weakness and an irritability without any apparent cause.

The importance of a comprehensive knowledge of labyrinth disease, may be illustrated by the following cases recently seen in private practice:

**Case 1:** April 3rd, 1917. J. T., age 24, consulted me about his ears, which had been discharging pus for six months. He did not have much pain before or after rupture of the drums; no headache, no fever, no mastoid symptoms. Was very deaf in the right ear and at times, had dizzy spells. Was sick at his stomach much of the time, could not eat or sleep well. Lost weight and recently could not attend to his work. Examination showed both of the ear drums ruptured and an abundance of fetid pus in the canals.

**Hearing:** Absolute deafness in the right ear. Conversation heard at six feet in left ear; high and low tones heard but short. Slight spontaneous nystagmus to left or better side, but no reaction with ice water irrigation in the right ear. Well marked nystagmus to the right by irrigating left ear. Although he denied having had syphilis, the Wasserman proved strongly positive. The patient was put on mercury and potassium iodide with the advice to take salvarsan as soon as he could secure it. He did not improve and in a few days returned complaining that he was getting worse and had developed a right sided facial paralysis. Salvarsan was administered and in a few days he had improved somewhat. He could hear a loud voice in the right ear and the vertigo was not troubling him so greatly. At present, two weeks later, although he had had another injection of salvarsan, there is no improvement. He is deaf in the right ear, has a slight vertigo and the facial paralysis is unchanged.

**Case 2.** April 3rd, 1917. Mrs. L. Age 29. Residence Louisiana. Consulted me as to a discharging ear which had not healed following a radical mastoid operation 9 years ago, by Dr. Bacon of New York City. She complained of intense vertigo, fainting spells, nausea, pain in the head, headaches and could not sleep. She was nervous and her health was gradually getting worse. Examination of right ear showed an old mastoid scar well healed, externally and internally, with the exception of a small spot over the horizontal semi-circular canal through which pus exuded.

**Auditory examination:** Absolute deafness in the right ear. Vestibular test showed spontaneous nystagmus at times. **Caloric reaction** with ice water: Very prompt nystagmus to the left. **Fistulat test:** Positive. **Equilibrium:** Falls to the left when standing with eyes closed. **Wasserman reaction:** Negative. This case was referred to an otologist near her home who having made the labyrinth operation reported, he found a fistula of the semicircular canal, while the vestibule and cochlea were filled with granulation tissue. Patient made a good recovery.

**Case 3.** April 20th, 1917. Miss F. Age 28, cashier in store. Stated her left ear had discharged pus since childhood. Had been under treatment for several years without any relief. Although her general health was good, she stated that she had dizzy spells and could not work for several hours at a time. Was also nauseated at times and declared that if she did not get relief from the dizzy spells she would go crazy.

Examination of the left drum disclosed a large perforation through which the opposite wall could be seen covered with pus. No evidence of polyps or cholesteatoma. No indications of mastoid disease. Right ear drum normal.

**Nose:** Atrophis rhinitis. **Eyes:** Myopic, fundus myopic changes. **Hearing:** Right ear normal.

**Left Ear:** Conversation, 2 feet; whisper, 6 inches; high and low tones, short; noise apparatus in good ear, hears a loud voice at 18 inches in diseased ear.

**Vestibular tests:** No spontaneous nystagmus while in office. **Caloric reaction with ice water:** Pronounced rotary nystagmus towards the right or well ear. **Fistula test:** Negative. **Equilibrium:** Nothing definite. X-Ray of mastoid, negative. **Wasserman reaction:** Negative.

**Treatment:** Radical mastoid operation advised at once which will be done in a few days.

Case one was to all intents and purposes a labyrinth operative case, an absolute deafness, no vestibular response to ice water and facial paralysis, these, almost invariably mean a sequestrum of the labyrinth. However, the positive Wasserman precluded immediate operation, although it should yet be done in case he does not progress satisfactorily.

Case two was a fistula of the labyrinth with destruction of the cochlea and the nerve endings in the vestibule and the saccule, but there was sufficient reaction to some part, probably in the semicircular canals to cause an intense vertigo so troublesome that a labyrinth operation was imperative. The radical mastoid operation 9 years ago, was no doubt the right thing to do at that time, but it was one of the occasions when that operation must be followed by the more radical procedure of removing the infection within the labyrinth.

Case three has an irritation to the vestibular portion of the labyrinth, possibly a fistula. The useful amount of hearing in the diseased ear and the danger of meningitis from a labyrinth operation, calls for only the radical mastoid operation at present, with the possibility that the labyrinth nerve endings may later become destroyed which would then call for the labyrinth operation as was necessary in case 2.



## THE PATHOLOGY OF ACUTE ACIDOSIS

BY

DR. W. WARNER WATKINS, Director Pathological Laboratory, Phoenix, Ariz.

This paper will deal neither with the clinical symptoms nor the treatment of acidosis, but will touch on the etiology only so far as it is interwoven with the pathology. The term "acidosis" does not usually convey a distinct idea. One of the reasons for this is that we do not have clearly in mind the normal blood conditions, deviations from which produce an acidosis. Our vague impression is that some body tissue or fluid, which ordinarily is alkaline or neutral in reaction, becomes acid, this abnormal condition producing a train of symptoms.

In the first place, it is incorrect to think of an acidosis as a clinical entity, for there is always an underlying pathology which is the real disease. "Acidosis" is defined by Prof. Lawrence Henderson (1) as "any disturbance of the acid-base equilibrium whereby the power to resist acids in the body is lost." In other words, the blood loses the ability to maintain neutrality and acids are allowed to accumulate. If we have clearly in mind the processes whereby the blood neutrality is maintained and what is meant by acid-base equilibrium, we will, then, be in position to appreciate just what an acidosis is.

*Regulation of Neutrality:* In health, the reaction of the blood and other tissues of the body is practically neutral. The old idea that blood and body fluids are alkaline is erroneous. It was based on the observation that these fluids can neutralize acid, but we have since learned that the ability of a fluid to neutralize acid or alkali is no indication of its reaction. Acidity and alkalinity depend, respectively, upon the number of free H or OH ions, and upon nothing else. A chemical compound produces acidity just to the extent that it liberates free H when it goes in solution. A solution of NaCl is neither acid nor alkaline, because it liberates neither H nor OH in solution. We get free ions of Na and free ions of Cl, so that the solution is electro-conductive, but the neutrality of a solution is not altered by dissolving salt in it.

A neutral solution is one in which all the hydrogen (acid) ions are neutralized by an equal number of hydroxyl (alkali) ions. Distilled water is neutral because it has a very small number of hydrogen ions offset by an equally small number of hydroxyl ions. At 25 degrees Centigrade, a neutral solution like distilled water or seawater, will contain in each 1000 grams, .0000001 gram of free ionized hydrogen and .0000017 gram of free ionized hydroxyl, this condition of neutrality being expressed by "N/10,-



maintain the neutrality of that fluid against all acid introducing during health. The usual sequences are shown on Charts I and II. Acid entering the blood encounters the bicarbonate, which Henderson (1) calls the blood's third constituent; the acid is neutralized and carbon dioxide liberated; this is removed by the lungs and a neutral salt is left. If the acid reacts with phosphate, the salt formed in the blood is the neutral salt; in the kidney this is changed to the acid phosphate, thus removing additional acid.

One *emergency method* of removing surplus acid is through the amphoteric property of protein of combining with either acid or alkali as occasion demands. Still another method is through the use of ammonia formed during protein catabolism (see Charts V and VI). The body can even destroy its own proteins to produce ammonia for combatting acid.

(4) **Excretion.** However efficient the neutralization of acid and alkali in the body may be, the preservation of neutrality is absolutely dependent upon the prompt excretion of acid and acid salts. This excretion virtually means elimination of carbon dioxide by the lungs and acid phosphate by the kidneys.

*Chemistry of Acidosis:* While acute acidosis is found associated with many diseases, the exciting causes are practically the same in every case; that is, either the sudden introduction into the blood stream of overwhelming amounts of acid, or the sudden cessation of elimination of acids by the kidneys, or both. The introduction of sufficient acid to wipe out the alkali reserve of the blood may practically always be traced to a failure of metabolism to thoroughly oxidize acids, or to the formation of abnormal quantity of acids in the intestinal tract. Such an acidosis, once started, continues in a vicious circle. A typical illustration of acidosis resulting from suboxidation is seen in carbon monoxide poisoning. Yandell Henderson (3) has shown that when one-third of the hemoglobin of the blood is bound by CO, an intense acidosis supervenes, disappearing as soon as this hemoglobin is freed and resumes its oxygen carrying function. This explains the extreme susceptibility of children to acidosis, since they are known to have imperfect oxidation processes and a low alkali reserve, as compared with adults.

The perversions of combustion processes along the alimentary canal or in the course of metabolism, leading to the introduction of abnormal acids, or their formation in the blood stream, are the fundamental causes of acidosis. The substances which attack the alkali reserve usually belong to the acetone or ketone group and can be derived from either of the three classes of foods. As a matter of fact, carbohydrates do not give rise to them, for the simple reason that the carbohydrates, on account of their chemical construction, are so readily oxidized (see Chart III). Furthermore, they are directly antiketogenic in that, when oxidized, they assist the combustion of fat. This old physiological principle has

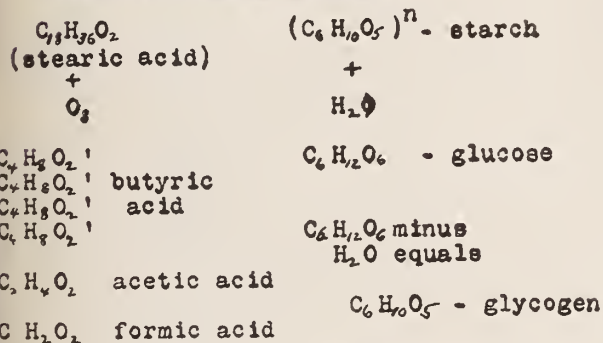


been reduced to mathematical exactness by Zeller and Lusk, and we now know that for the combustion of three molecules of fat, one molecule of glucose must be simultaneously burned, else the fat will not be entirely oxidized. As Woodyatt (4) expresses it, "when the proportion of glucose is less than this the fat is not oxidized and the body smokes like an auto engine with too much oil in the cylinder."

The origin of the acids of acidosis, therefore, is from the fats and, to a lesser degree, from protein. "It (4) is at present common knowledge that betahydroxybutyric acid and its two cogeners, betaketobutyric and acetone, known collectively as the acidosis compounds or acidosis bodies, arise from products formed in the catabolism of fats and proteins and more specifically from certain of the lower fatty acids containing an even number of carbon atoms, in particular perhaps, butyric acid. These lower fatty acids may be formed from the higher fatty acids and from certain of the amino acids."

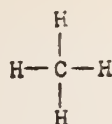
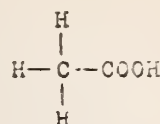
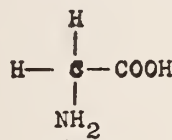
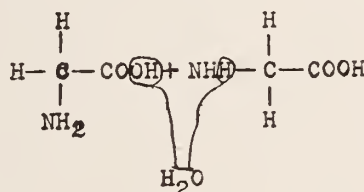
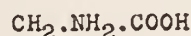
The usual source of abnormal acid is from the lower fatty acids. The reasons for this are simple. (1) Fats undergo less chemical change in the intestine than either of the other foods, being thrown into the blood stream and offered to the tissues for metabolism in comparatively large molecules; consequently more time and more combustion energy are required to bring them to forms which are not acid; (2) they are acid throughout their entire catabolism, so that the tissues are in contact with acid compounds for a longer time and must furnish more alkali to keep these compounds neutralized; (3) proteins are amphoteric, while fats can only be neutralized by alkali; (4) proteins furnish ammonia by deamination, thus helping to neutralize their own acid products, while fats must be taken care of entirely by the reserve alkali of the blood. An example is shown in Chart III, of stearic acid, one of the normal acids of food. By simple oxidation, requiring eight atoms of O for each molecule of stearic acid, we secure four molecules of butyric acid and one molecule of acetic acid; eight additional atoms of O will be required to bring all the butyric acid to acetic, whereupon there must be immediately available sufficient oxygen to oxidize the acetic acid to carbon dioxide and water, else the alkali reserve will be called upon. It will be noted that, as the oxidation of fat proceeds, the products become more and more acid, so that when the catabolism of fat begins, there must be available for each molecule of stearic acid, fifty-two atoms of oxygen, in order to bring the fat to the stage of  $\text{CO}_2$  and water, without calling on the alkali reserve. The simultaneous combustion of carbohydrate would diminish this necessity considerably.

That protein is a source of acidosis compounds very frequently, is gaining more and more attention, and we must not overlook deviations from normal digestion and metabolism of protein when seeking the source of an onslaught on the neutrality of the blood.

WHY FATS CAUSE ACIDOSIS

To oxidize one mol. $C_{18}H_{36}O_2$ to CO and H O requires <u>52</u> atoms of oxygen.	To oxidize one mol. of $C_6H_{10}O_5$ requires <u>18</u> atoms of oxygen.
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Chart III: Illustrating the difficulty in oxidizing fat, compared with the ease with which carbohydrate is hydrolyzed.

CH<sub>4</sub> - methaneCH<sub>3</sub>.COOH - acetic acidAmino-acetic acid  
(Glycin)

$$CH_2.NH_2.CO.NH.CH_2.COOH$$
  
(Simplest possible polypeptide)

Chart IV: Showing the relation between organic acids, amino-acids and polypeptids.

An organic acid may be regarded as a hydrocarbon (e. g., methane) in which one H atom is replaced by the carboxyl radical (COOH), this being the characteristic group of all organic acids.

An amino acid may be regarded as an organic acid (e. g., acetic), in which one of the remaining H atoms is replaced by the amine radical (NH<sub>2</sub>).

A polypeptid is the product of the union of two or more amino acids, this union occurring by hydrolysis, the OH of one carboxyl uniting with one H of the opposite amine radical.

The chemical origin of such abnormal acids is easily seen by studying the construction of the amino-acid. As Underhill (5) has shown, the proteins are broken up in the intestines and absorbed as amino-acids. In the present stage of knowledge of physiological chemistry, the whole tendency is to regard the protein molecule as a huge polypeptid containing hundreds and thousands of amino-acids linked together in inconceivably complex compounds. In Chart IV, the relation between organic acids, amino-acids and polypeptids is shown. We know that normal digestion splits the protein molecule into amino-acids and that these are absorbed directly into the blood, where they are immediately neutralized or further oxidized. There is a stage in hydrolytic cleavage of polypeptids where ab-

sorption and utilization best occurs. Failure of digestion to bring them to this stage causes the absorption of products which require further oxidation in the blood stream. If the blood trypsin and metabolic processes are unequal to this task, we have a sudden call on the alkali reserve to neutralize these acids. On the other hand, if the oxidation in the intestine should be carried beyond the normal stage by bacterial putrefaction, there is absorption of acids which are not amphoteric and which demand more alkali than normal products of digestion would. An enormous amount of acid may be introduced in this way.

The amino-acids which are absorbed into the circulation must be oxidized to lower forms, and conditions of suboxidation may cause this catabolism to stop at a dangerous point. To illustrate (Chart V), leucin is a normal product of protein digestion and is absorbed as such into the blood, where it is immediately taken in hand by the chemical laboratory of the tissues. Generally the first stage in the catabolism of an amino-acid is that of de-amination and oxidation, splitting off ammonia and adding oxygen. With leucin, this leaves ketone acid and one ammonia radicle which can be either used as an emergency alkali or united to carbon dioxide and eliminated as urea (see chart). By oxidation of the ketone acid, there is formed iso-valeric acid, one of the lower fatty acids of the acidosis group. Further cleavage of this product gives acetone and acetic acid

#### ACIDOSIS FROM AMINO ACIDS

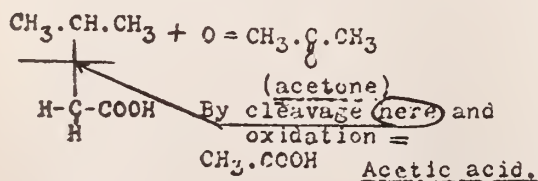
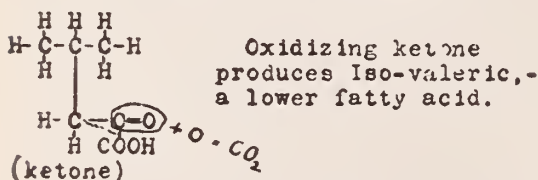
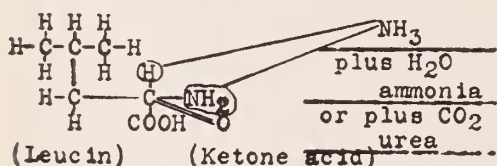
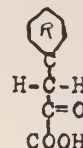
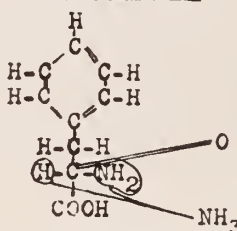


Chart V: Illustrating the ease with which acidosis may be produced by incomplete or perverted metabolism of proteins.

#### Phenyl-alanin

by oxidation produces Phenylperuvic acid



By opening the chain, oxidizing and hydrolyzing, we secure, -

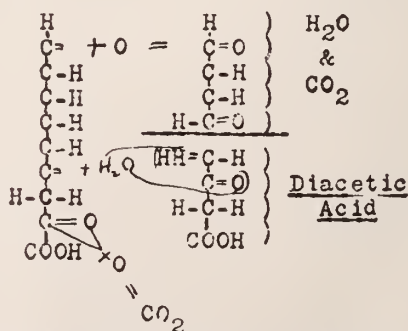


Chart VI: Showing how acid products may arise from incomplete oxidation of closed chain amino acids.



which, normally, are carried through to carbon dioxide and water. It is easy to see that trouble will result from failure to carry through these last stages of catabolism.

In the case of the slightly more complicated closed ring amino-acids, they will be treated as in Chart VI. Phenylalanin, a constant derivative of gelatin is deaminized and oxidized to phenylperuvic acid. The chain is then broken open, leaving a compound unsaturated at two points; here by oxidation and addition of water, carbon dioxide, water and diacetic acid are produced. Normally, the diacetic is oxidized to its end products, but conditions of suboxidation may prevent this last step and invite acidosis.

Another exogenous source of abnormal acid which has not received the attention it deserves is putrefaction of food in the intestine. Much has been written on stasis and intestinal intoxication, but the entire field is chaotic. Vincent (6), years ago, insisted on the importance of the intestinal bacteria in the disturbance of infant and child metabolism, and the importance of maintaining a certain ratio between the lactic and colon

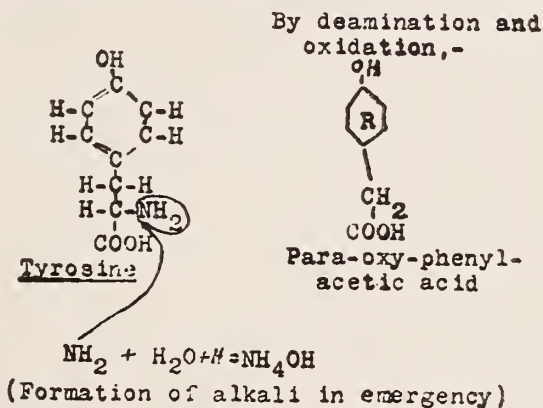


Chart VII: Illustrating the method of producing acid compounds by bacterial putrefaction of tyrosin.

groups, keeping the latter in the minority as long as milk is the principal food. The recently demonstrated fact that putrefactive bacteria do not grow on pure proteins, but require the simpler amino-acids for their nourishment, coupled with the facts just stated, that amino-acids are the normal products of digestion, suggest important possibilities. Granted the presence of abnormal numbers of putrefactive bacteria, especially in the terminal ileum and cecum and a stasis of food or food residue containing amino-acids, and what is to be expected? One illustration will suggest a host of similar ones. Tyrosin, a normal result of protein digestion, is an amino-acid which is especially susceptible to bacterial putrefaction, going through the changes shown (Chart VII), when acted on by bacteria. The ultimate products either before or after absorption will be diacetic acid. It will be recalled from the chart showing the oxidation of stearic

acid (Chart III), that formic acid ( $\text{CH}^2\text{O}^2$ ) is in the scale just below acetic acid, and is formed by oxidizing the latter. Formic acid is a characteristic result of bacterial action on fat in the intestinal tract and is oxidized to simpler forms with great difficulty.

*Failure of Elimination:* Having reviewed the sources of acidosis compounds, we will consider, briefly, the second pathological basis for the condition; namely, the sudden failure of the kidneys to eliminate the acids brought to it by the blood. Diseases of the respiratory tract frequently limit the intake of oxygen and the excretion of  $\text{CO}^2$ , to such an extent that acidosis follows, but, usually, as long as the kidneys are functioning normally, there will be no dangerous accumulation of acid. The kidney removes acid almost entirely in the form of sodium dihydrogen phosphate (Charts I and II). The phosphate of the blood is the neutral salt, with two atoms of Na and one atom of H. The salt which leaves the kidney contains one atom of Na and two atoms of H. This means that the kidney not only removes the products of acid neutralization, but goes one step further and inserts an extra atom of acid H, which it takes from the blood, and returns an atom of Na to be added to the alkali reserve of the blood. When the kidney fails to perform this function, or when the entire kidney function is suppressed, acid rapidly accumulates. Phosphoric acid, entering the blood stream with food, changes the neutral phosphate to the acid salt, which remains to work havoc. Hydrochloric acid uses up the bicarbonate, and the alkali reserve is soon wiped out.

The diseases of the kidney which cause phosphate retention are beyond the scope of this paper.

*Histo-Pathology:* The histological changes produced by acute acidosis per se, have received scant mention in literature. These consist in a cellular edema, cloudy swelling of the cytoplasm, degeneration of nuclei, death of the cell and ultimate absorption of the cell substance. This is the uniform change, and the histological picture will depend on the organ examined. In the kidney we have this sequence of events resulting in (a) diminished or suppressed secretion through closure of the tubules by cellular edema; (b) as the cells degenerate, the tubules are filled with detritus, albumen and all kinds of casts appear in the urine; (c) finally, a diffuse destruction of the functional elements of the kidney. Abt. (7) describes a violent form of acidosis in children, ushered in with gastro-intestinal infection, quickly producing an overwhelming acidosis; the alkali reserve being wiped out, a violent nephritis follows, and death soon follows. One such case seen by the writer and examined at post mortem showed the above described histological picture in the kidney.

*Tests:* A few words about the comparative value of the several groups of tests for acidosis. These are four in number.

(1) *Urinary Acidity:* The ordinary tests for acetone and diacetic acid should be taken as danger signals only. If either of these substances

are present in any quantity, the physician should be on the lookout for an acidosis. However, an acetonuria is not, by any means, conclusive proof of acidosis. Conversely, we may have an intense acid intoxication with little or no acetone in the urine, because diminished alkalinity is a condition very unfavorable for diuresis (Marriott, 8). The hydrogen-ion acidity of the urine as compared with the titration acidity, is very suggestive. Many chronic nephritics have a highly acid urine, with a great diminution of acid phosphate. This is due to the presence of acid H in the urine, as proven by indicators, while the phosphates have been retained in the blood, as proven by the low titration acidity of the urine. The hydrogen-ion acidity may reach the extreme danger point, while the urine will show a very low titration acidity to alkali. In the absence of evidence in the urine, sufficient to make a diagnosis of acidosis, the permeability of the kidney must be known before we accept the negative evidence of the urine.

(2) *Alkali Reserve:* The reserve alkali of the blood is a very constant factor and variation from it is produced only by pronounced chemical changes in the blood. Testing the blood serum for its alkali reserve will give the most accurate information regarding the conditions present at the particular time. However, it has the disadvantage that the alkali reserve changes more rapidly than any other indication, being restored as suddenly as it was lost. Furthermore, the restoration of the reserve alkali does not always stop the acidosis.

(3) *Alveolar Tension:* This is an indirect method of estimating the quantity of acid in the blood. It is based on the fact that the carbon dioxide tension in the alveoli of the lungs corresponds almost exactly to the carbon dioxide tension in the blood, coupled with the additional fact that the hormone of respiration is the hydrogen ion and not carbon dioxide, as formerly thought. As acid increases in the blood, it combines with the carbon dioxide, and at the same time stimulates the respiratory center, thus emptying the alveoli of the lung of carbon dioxide. So that by testing the amount of  $\text{CO}_2$  in the air breathed up from the depths of the lung, we attempt to arrive at the corresponding amount of  $\text{CO}_2$  in the blood and, thus, indirectly, at the amount of acid which is present. Various conditions vitiate the reliability of the alveolar air test. These are those which tend to increase the respiratory rate and thus ventilate the lung more than normal, as well as conditions which will prevent ventilation of the lung and frustrate the effort to secure an air specimen from the depths of the organ.

*Alkali Tolerance:* By feeding measured amounts of bicarbonate of soda, we ascertain the amount of alkali required to produce an alkaline reaction in the urine. This tells us the amount of alkali required to neutralize the acidity of the blood, because only after this has been neutralized will alkali begin to appear in the urine, as shown by reaction with alkali indicators.



Acidosis is gradually gaining a place of commanding importance in the pathology of acute diseases. Many of the histopathological changes which were formerly attributed to the effects of toxins can just as readily be due to contact of cells and tissues with acids. It is certainly true that, in the evolution of all forms of life, from the primordial cell to homo sapiens, the maintenance of neutrality is the one fundamental prerequisite to the existence of life, and elaborate provision has been made to combat the invasion of acid. Where Nature speaks so plainly, we who are but humble pupils of the great teacher, must listen.

#### REFERENCES

- (1) L. J. Henderson, Harvey Lectures for 1914-15.
- (2) Fischer, "Edema and Nephritis."
- (3) Yandell Henderson, Jour. A. M. A., Vol. LXVII, p. 580.
- (4) Woodyatt, Jour. A. M. A., June 17th, 1916.
- (5) Underhill, "The Physiology of the Amino Acids."
- (6) Vincent, Amer. Jour. Dis. Children, Feb., 1914.
- (7) Abt., Amer. Jour. Med. Sci., Jan., 1914.
- (8) Marriott, Jour. A. M. A., Aug. 1st, 1914.

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### KIDNEY CONSERVATION

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BY

WILLARD SMITH, M. D., Tucson, Arizona.

(Read before the 3rd Annual Meeting of the Southwest Medical and Surgical Association  
of the Southwest, El Paso, Texas, Dec. 7th, 1917.)

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The open season for kidneys is drawing to a close. It is not very long since kidneys were in nearly as much danger of elimination by surgical sportsmen as ovaries had been a few years before. Almost anything was a "surgical kidney," and nephrectomy is a spectacular operation. Hence, many a kidney has been sacrificed, either because the surgeon knew no better, or because the methods by which it might have been saved are such slow and careful ones. That treatment which is quick and usually effective, even though it involves a serious sacrifice for the patient, is a temptation to the surgeon. It seemingly solves the problem in one masterly stroke. The patient remains well long enough for the doctor to collect. Also, the subsequent history is often not known by the surgeon, for when kidney number two begins to resent the insult, the patient frequently seeks a new source of advice. So the surgeon loses the opportunity to see ultimate results and continues to follow a course which he would abandon if he could broaden his insight.

There is much to be said in favor of developing insight. It is an unfortunate fact that the great men in the profession have a contact with each patient which is merely tangential. The patient does his getting

sick and getting worse under the care of his family doctor. Limitations of various kinds handicap the doctor and, many times, he is unwilling, or unable, to use the time and painstaking patience, as well as study, which might check the trouble early. In time the patient goes from bad to worse, **and is taken to a surgeon.** Nephrectomy is advised and done; the patient goes home and is under the care of the family doctor again. All is well for a time, but presently the other kidney goes wrong. The doctor reasons that it is the only kidney left, and that the surgeon said the cure for its similarly affected mate was to remove it. Removal of the remaining kidney is out of the question. Therefore, the only thing to do is to make the best of an unkind fate and ease the patient to the grave. It is not worth while to consult the surgeon about this kidney.

Hosts of such cases are not reported to the surgeon. In his statistics the case is listed as a cure or as lost from observation. Meantime he is doing the same thing to scores of other cases. The ultimate results in some of them are known to him, but many are lost in the hurry and bustle of the everpresent urgent calls on his time, attention, and skill. The surgeon may be, and usually is, honest in his statistics. But sometimes he lacks the facts and hence is apt to be led astray in his conclusions. This causes him to do more nephrectomies, and to fail to try out the other methods by which catastrophies can many times be avoided.

Let it be understood, I am not condemning surgical enthusiasm and calling surgeons ruthless. As a class, there is no more conscientious body of men on earth. But every man has to draw his conclusions and determine his actions on the basis of the facts he has to command. The more narrowly a man specializes, the more limited is his contact with the individual patient. And the men who specialize most intensely are the men who lay down the surgical laws. In gaining depth they lose breadth of vision, and it is conceivable that this may make it advisable to accept their conclusions with care. This is one of the penalties of specialization. It is a penalty which seemingly must be endured on account of the many counter-balancing advantages of the system; but, if we wish to arrive at any correct conclusion, we must consider the personal equation when we seek the advice of those who have authority to speak on a limited subject.

There are many kidney conditions which demand, and must have, radical surgery. But there are many other kidney conditions which have been treated radically by removal when more conservative methods would have saved the kidney. This applies especially to the acute infections. It is by no means true that a kidney full of pus is a kidney which must be removed or even drained. The work of Rollier in surgical tuberculosis has decidedly changed our ideas about removing tuberculous kidneys. The use of autogenous vaccines and actinotherapy has proved that a large percentage of the cases of pyelitis and pyonephrosis may be cured, providing we are willing to take enough time and trouble. Even such cases as were formerly treated by nephrectomy or drainage often yield to conservative

measures leaving more functioning kidneys than can be secured by rash surgery. Long ago we learned to wait for a line of demarcation in gangrene. We found that Nature is better able to determine the line between dead and living bone than we can determine with a chisel. There is a time to amputate in gangrene. There is a time to do sequestrotomy in our bone work. There is also a time to wait for Nature to tell us what she can do with a damaged kidney.

In kidney tuberculosis we know that the result of surgical treatment is, at best, a compromise. Fifty per cent of the kidneys which are demonstrably free from infection, eventually succumb to disease. This is due to several causes, all of which should teach us to use patience. The mere repeated absence of tubercle bacilli from the urine of a catheterized ureter does not prove that kidney non-tuberculous. The bacilli will not enter the urinary tract until the tuberculous foci have reached a condition analagous to the second stage in pulmonary tuberculosis. Previous to that time these foci are amenable to the same curative influences as are the analagous pulmonary lesions. They respond to rest, fresh air, good feeding and immunizing therapy. *But they require time.*

The most frequent mistake for which we of the Southwest chide our Eastern and Northern colleagues, is the fact that they often tell the patients they send to our country that they will be well in a few weeks or months. No one who has had much to do with tuberculosis will feel at all safe about even an early case until from two to five years have elapsed. So we endeavor to impress this fact on the pulmonary patient and deliberately plan a long siege. If we don't do so, we lose. Then why can't we use equally good sense in kidney tuberculosis? Why do we refuse the patient his chance to heal a lesion which would merely scar an organ, and deliberately deprive him of the entire organ? On a par with our dictum that it is necessary to remove a tuberculous kidney, would be a verdict that we must remove a whole lung every time we find a tuberculous spot in it. I maintain that there are as many spontaneous and unknown recoveries from kidney tuberculosis as from pulmonary tuberculosis. I go farther and assert that the proportion of recoveries is probably higher. This is because the kidney is an immobile organ. The lung is not, even when compressed by artificial pneumo-thorax. In this procedure we try to approximate absolute rest, with the intention of restoring the undamaged part later to an approximately normal physiological activity. The only way to stop the function of a single kidney is to kill it—to remove it—and this precludes the possibility of ever using even its undamaged portion again. We put the pulmonary patient to bed to lessen the work his lung has to do—to approximate complete rest as nearly as we may. The functional activity of the kidney is directly proportional to the amount of the body waste it must eliminate. The less bodily activity, the less waste, and, hence, the less kidney activity. Certainly it is logical to put the kidney case to bed for as long a time as we do the lung case. But such a course is tedious and



uninteresting—so out comes the sick kidney and a double load is thrown on the fellow kidney. There is at least a 50 per cent chance that the remaining kidney has incipient foci of tuberculosis. The double duty hastens the development of these foci and often makes them incurable.

The analogy can be carried farther. In the open stage of pulmonary tuberculosis most of the mixed infection is metastatic. It is so with a tuberculous kidney in the open stage. Thorough search for pus infections elsewhere in the body, and their elimination, is essential in the proper care of pulmonary tuberculosis. It is of equal or greater importance in the kidney case. The treatment of such pyogenic foci is never complete until we have fortified the organism by using vaccine therapy, and the kidney case should have the advantage of this. If the original focus of infection cannot be found, the pathogenic micro-organisms can usually be secured by ureteral catheterization, and a vaccine made.

Another pernicious practice is that of leaving the ureter when a tuberculous kidney is removed. It is in only a limited proportion of such cases that the ureter is removed—and it is usually infected. Most surgeons simply tie its upper end and leave it. Some inject a little carbolic acid and leave it. It almost always causes trouble and must be removed later. I have repeatedly catheterized ureteral stumps and proved them to be hot-beds of tuberculosis. If we remove a tuberculous kidney, let us at least do a good job. Such a kidney is not properly removed unless the entire ureter is removed with it. Even if it does not show macroscopic evidence of disease at the time, it will almost invariably do so later. If the other kidney is not already infected, the chance that it will be is materially increased by leaving the ureteral stump. The attempt to treat the stump later by way of the ureteral catheter is not successful. Like all other organs whose work has been taken away it becomes a trouble maker. If you *will* remove the tuberculous kidney, do it thoroughly; and that means take out the urinary tract clear down to the bladder.

Tuberculosis of the kidney is usually secondary to tuberculosis elsewhere in the body. There is no disputing the fact that many tuberculous kidneys must be taken out. In more than half of these cases the removal of the kidney fails to cure the patient. As well try to cut down a tree by pulling off its leaves as to undertake the control of tuberculosis by lopping off a diseased organ here and there. I have mentioned rest as essential to the cure. It is also advisable that tuberculin or Spengler's Immune Serum be used, the former when there is no fever, never when fever is present; the latter when there is fever. I have seen results from it so often that there is no doubt in my mind of its efficacy. But it must not be used like dynamite. The most powerful forces in Nature are the quiet ones. They are also the slow ones. The reason why many doctors do not get results by the use of tuberculin is because they are unwilling to be patient and painstaking. Much of the success of tuberculin therapy depends upon the willingness to spend time and effort to explain

to the patient what is being done and why. The patient's mind must be kept right. It does little good to regulate the patient's rest and diet if, in that patient's brain there is going on a storm of doubt, unrest or rebellion.

There are several ways of gaining the cooperation of the patient. One way is to browbeat him into obedience by assuming a Jovian attitude. That seldom lasts long, for sooner or later the patient sees through the bluff, and when confidence is thus lost, it is gone forever. Another way is to be mysterious and profound, and ape the charlatan. The kind of patients who can be thus controlled are of the spineless type and they usually falter and fail before the goal is reached. The best way is to educate the patient. One of my colleagues says that the treatment of tuberculosis would be simplified if the appendix were removed in the early stages. He may be right, but I can't see it his way. My idea is that the first thing necessary is to be honest with the patient. Explain to him the nature of the disease, and then carefully educate him to understand exactly what must be done and how long it will take, always clearly pointing out the reason. Many will wilt at the outset and quit. They are good riddance, for they are made of the stuff that can't make a successful fight, and the effort spent on them would probably be wasted. But the ones who are worth while will, through this candid treatment, become real helpers, and their chance of recovery will be greatly enhanced. It is a lamentable fact that our trend toward pathology and fine-haired diagnosis, which is all very good and is to be encouraged, makes us better scientists but poorer doctors. In the actual work of making sick people well we must remember that we are not veterinarians, but are dealing with thinking people. And we must not lose sight of the fact that the intelligent cooperation of the patient is of prime importance in any fight which is sure to be so prolonged as that against tuberculosis.

In non-operative treatment of kidney tuberculosis, one therapeutic aid of great value is heat. In my experience this can most effectually be used in this class of cases by means of a therapeutic lamp. The rays of a powerful incandescent lamp, concentrated over the kidney region for half an hour every day will, unquestionably, cause a hyperemia which is not entirely superficial, but which affects the kidney as well. Free sweating is induced, which lessens the duty of the kidney, and also, what is more important, the hyperemia is curative. In the cases in which one kidney has been removed and tuberculosis has developed in the remaining one, this treatment is capable of slowing the disease and lengthening the life of the patient very materially. I have one case of this sort in which I am satisfied that two years have already been added to the patient's life. During this time her daily urinary flow has never been over ten ounces and averages about seven ounces. This urine is about one-fourth pus and loaded with tubercle bacilli. By daily bakings she has not only lived and been fairly comfortable for two years, but during that time has been able to

be the guide of a daughter who is just approaching womanhood, the time when a mother is most needed.

In time past, I may have been over quick to do nephrectomy in pyonephrosis, and I may err on the other side now. But it is a source of satisfaction to look back over the past four or five years and recall many patients in whom formerly, I would have removed a kidney, and to see them now alive and well and still with their full quota of kidneys.

One young woman had unilateral pyonephrosis. Infection was by an unidentified diplococcus. She had a temperature of 104 degrees every day for four weeks. She was intensely septic and, if ever there was a case for nephrectomy, this was one. But she still has both her kidneys, and within eighteen months of the time of her acute infection, she gave birth to a normal child and had no trouble with her kidneys during the pregnancy. I attribute her cure to an autogenous vaccine and patient care. The more I see of such cases, the fewer nephrectomies I perform. The other course takes more time and work, but I have seen them recover so many times that I always give them a chance.

Kidney surgery is an attractive field. There is plenty of chance for its exercise outside of the infections, and, especially in the acute cases, it is worth while to give the kidney a chance. A kidney saved to usefulness is far more of a triumph than one sacrificed to the Moloch of surgical skill.

My object in presenting this paper is to plead for conservatism. Even if what is saved is only a part of a kidney, it is useful and the patient has a right to it. By following the conservative course, you will be surprised to see how many so-called "surgical kidneys" will reform and lead exemplary lives, if you give them a fair chance.



# Southwestern Medicine

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All articles must be made exclusive to this journal. Reports of Society Meetings are asked for from the Secretaries.

Items of interest, with the name of the sender will be acceptable.

Books for review should be sent to The Editor, care of the Medical Library, 320 Roberts-Banner building, El Paso, Texas.

Advertisements of proprietary medicines must have had the preparations approved by the Council of Pharmacy, A. M. A.

All business communications should be addressed to Eugene W. d'Allemand, 609 First National Bank Building, El Paso, Texas, Telephone 2297.

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## EDITORIALS

### SAVING MOTHERS

More women 15 to 45 years of age die from conditions connected with childbirth than from any disease except tuberculosis. About 15,000 deaths from maternal causes occur annually in the United States, and the available figures for this country show no decrease in the maternal death rate since 1900. Maternal deaths are largely preventable by proper care and skilled attendance.

These 15,000 deaths do not measure the full extent of the waste. They are merely a rough index of unmeasured preventable illness and suffering among mothers. Furthermore, certain diseases of early infancy are closely connected with the health of the baby's mother and the maternity care she has received, and these diseases cause about one-third of all the deaths occurring among babies under one year of age. More than 75,000 babies die each year from this group of diseases because they do not have a fair start in life.

The life and health of the mother are in every way important to the well-being of her children. Breast feeding through the greater part of the baby's first year is his chief protection from all diseases, and mothers are

much more likely to be able to nurse their babies successfully if they receive proper care before, at, and after childbirth.

The expectant mother should at once consult a physician. She should remain under supervision so that any dangerous symptom may be discovered as soon as it appears. She should learn how to take care of herself, and she should have proper food and rest and freedom from anxiety. When the baby is born the mother needs trained attendance. A difficult maternity case is one of the gravest surgical emergencies. Many people do not seem to understand that in any case complications may arise which can be met safely by prompt and skillful scientific care but which at the hands of an unskilled attendant may cost the life of mother or child or both. Even after confinement the mother needs continued supervision and rest until her strength has returned.

Thousands of mothers, both in city and county, do not have the essentials of safety, partly, perhaps chiefly, because they do not realize the dangers involved in lack of care or else accept the dangers as unavoidable. Many women are at present unable to obtain proper care, but when all women and their husbands understand its importance and demand it for every mother, physicians will furnish it, medical colleges will provide better obstetrical training for physicians, and communities will see to it that mothers are properly protected.

Little has been done as yet to show women that much of the waste of mothers' lives and health is unnecessary. Even less has been undertaken by communities to provide protection for them. Many communities which have studied their typhoid and tuberculosis death rates and have undertaken costly measures to reduce them have been heedless of the death rates among mothers. It is not strange therefore that since 1900 the typhoid rate for the country as a whole has been cut in half, and the rate from tuberculosis has been markedly reduced, while the death rate from maternal causes has shown no demonstrable decrease.

Just how the importance of adequate maternity care is to be made plain to a community, and just how skilled care and instruction are to be made available for all mothers, are of course local questions to be considered by each community. The prenatal clinics and prenatal nursing which are being developed in many cities suggest a method of supervision and instruction which might well be extended. Even in cities where such work is carried on and where good hospitals are numerous, the number of mothers reached is small in comparison with the number who bear their children without adequate care.

Difficulties are perhaps greatest in rural districts where the sheer inaccessibility of a physician is often added to the other elements of the problem. Here a public nursing service with headquarters at the county seat, or other accessible town, would probably be the first step, placing at the service of every expectant mother a visiting nurse who is especially

equipped to give her information about personal care and to watch for symptoms of trouble demanding medical advice. As such a nursing service develops, its headquarters might become, with the cooperation of physicians, a sort of maternal and child-welfare center to which not only expectant mothers but also mothers with babies could come for instruction, examination, and advice. If no general hospital were conveniently near, a cottage hospital for mothers and babies might ultimately form a part of such a center.

A more general use of existing provisions for scientific maternity care and the extension of provisions for such care in all types of communities should serve to reduce the number of deaths among mothers and babies and to improve the health and general condition of children throughout the country. A full discussion of the causes and prevention of maternal deaths and an analysis of available statistics, are contained in a report on Maternity Mortality, published by the Children's Bureau.

The Children's Bureau has several publications which are of interest in connection with work for the welfare of mothers and babies. A list of these publications will be sent upon application to the Children's Bureau, Washington, D. C.

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The increased cost of publication and the generally high cost of material makes it necessary for SOUTHWESTERN MEDICINE either to suspend publication temporarily or to reduce the number of pages in each issue. The Board of Managers has decided that the latter course is the one to pursue, and therefore, beginning with this issue the number of pages will be reduced to an average of 32 in each issue until such time as conditions and the income of the Journal warrant an increase in size.

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The article on Infantile La Grippe published in the July issue and credited to Doctor W. W. Dill of Albuquerque should have been credited to Doctor M. K. Wylder of Albuquerque.

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## BOOK REVIEWS

### WHAT IS PSYCHOANALYSIS?

By Isador H. Coriat. Moffat Yard, New York, 1917. Price 75 cents.

The immortality and importunity of truth hidden in therapeutics is strikingly seen in the way she has of appearing under a new name and vesture to appeal against a condemnatory verdict. I once made an ebb and flow chart of hypnotism covering a thousand years up to the mental healing which ran up to fever heat in 1908, then ebbed slowly until 1914 when "Psychoanalysis" came up for judgment, denying any connection with suggestion. To use Dr. Coriat's words:

"Psychoanalysis reaches the fundamental difficulties of the nervous illness, whereas suggestion merely side tracks it or covers it up for the time being." "A learning to see and accept one's self in the past and present tendencies," says another writer. "Not to know in detail why they are sick, but, through changes and readjustments in their lives made in the light of knowledge, to reach a cure." In plain words the skeleton in the closet is not denied; no "suggestion" is made as to its non-



existence, but the bony enemy is hauled out, taken to pieces and the fear of it proved to be absolutely unnecessary. It is difficult to agree that the "remote cause" is not possibly created or removed by suggestion, searching, perhaps, for a man or straw and then knocking him down. Perhaps psychoanalysis might be termed "militant suggestion." It does not seek to change the mental attitude toward disease but to remove the cause of it; it chases the patient out of all excusative trenches and forts, leaving him without a leg to stand on but mentally fit to kill the enemy.

Statements as to the cause and significance of dreams are condensed almost to non-lucidity. Larger views can be had in the more profound volumes given in the bibliography, but, given a cup of black coffee and three or four hours uninterrupted leisure, even the average doctor may get useful ideas of Psychoanalysis.

—D. W.

**Medical and Surgical Reports of the Episcopal Hospital.** Philadelphia. Vol. IV, 1916. W. J. Dorman, Philadelphia.

It is generally in Reports, Transactions, and Proceedings that the cream of matters surgical and medical is found, and for that reason even the old volumes of such form deeply interesting reading. In the recent ones the sons and grandsons of the pioneers, aided by modern laboratory findings, are seen clearing away obstacles the older men hardly dreamed of attacking. Volume IV of the Episcopal Hospital Reports edited by Dr. A. P. C. Ashhurst, bears out my first statement. There are four good papers from the editor himself, one on the Mosetig-Moorhof Iodoform Wax Bone Filling. I. M. Boykin has a useful paper, doubly interesting in war time, on A Method of Skin grafting, while Rutherford L. John is interesting in his Caries of the Spine Treated by Bone Transplanting. Frederick Krauss gives a Method for Ligation of the Ophthalmic Vein for Ophthalmus, and Edward Crossen, in one of his four papers, tells of A Bacillus Aerogenes Capsulatus Infection of the Shoulder, with Recovery. The illustrations do not bear that cheap impress which so often renders such useless in elucidating the text.

#### THE ROENTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL

By Russell D. Carman, M. D., Head of Section on Roentgenology, Division of Medicine, Mayo Clinic, and Albert Miller, M. D., First Assistant in Roentgenology at the Mayo Clinic. 504 original illustrations. Philadelphia and London, W. B. Saunders Company, 1917. Cloth \$6.00 net, Half Morocco \$7.50 net.

This book, a collection of the papers that have appeared from the Mayo Clinics during the past few years, shows all the principles subjected to the acid test of time and checked up in the operating room. The claims made for the X-Ray may be looked upon as reliable and not as results given by an enthusiastic specialist.

The plates, while not as elaborate as some that have appeared in other works, indicate clearly the condition under consideration. The text reference to cases quoted is somewhat confusing and might easily be better arranged from a referential point of view.

Otherwise, the whole style of the book is clear and concise, a characteristic common to all the books coming under the editorial management of Mrs. M. H. Mellish.

—J. W. C.

#### LABORATORY TECHNIQUE.

**The Methods Employed at St. Luke's Hospital, New York**

By Drs. F. C. Wood, Karl M. Vogel and L. W. Famuleuer. 1917. Dougherty, New York, price 75 cents.

This is a very concise and practical little book because all the uncommon and unnecessary things being left out, it is an every day working model.

In compiling a set of methods like this, it is somewhat like trying to make a cook book with the 500 best recipes obtainable. That is, no two cooks would agree on what were the 500 most important, and so it is that no two laboratory workers would agree as to what single method, for each case, is the best. In a small book like this, where only one method is given, it has, of course, some disadvantages, but it also is an advantage in that it does not furnish so many things that choice is difficult. For general laboratory work, the book as a whole is to be recommended, though anyone doing special work has his own pet methods. However, even an expert likes to have on hand a list of the methods used in a laboratory of a large hospital. Anyone wishing to do such work, and not much accustomed to it, will find that the book is an especially reliable guide because it goes so much into details and methods and tells exactly what is needed and how to do it.

—W. W. W.

## NEW MEXICO NEWS NOTES

Doctor Arthur J. Evans of Fort Sumner has been appointed a member of the Medical Reserve Corps. Doctor Evans is a member of the Chavez County Medical Society.

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Doctor David Twichell of Albuquerque has been appointed a member of the Medical Reserve Corps and commissioned with the rank of Captain. He is now on duty at Fort Bliss, Texas, as a special examiner.

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Doctor E. S. Bullock, Captain in the Medical Reserve Corps is now stationed at Fort Bliss, Texas, in charge of the board examining recruits for tuberculosis. In this work he is assisted, among others, by First Lieutenant E. A. Duncan, also of Silver City.

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Doctor Arnaud Kline, a member of the Bernalillo County Medical Society, has entered the military service.

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The Bernalillo County Medical Society has voted that members who treat bona fide patients of those who enter the military service shall forward fifty percent of the fees collected from these patients to the absentee.

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St. Joseph's Hospital, Albuquerque, has been doing good work in furnishing hospital facilities to the National Guard encamped near the city.

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The annual meeting of the New Mexico Medical Society will be held at Las Cruces, October 4th, 5th, 6th, next.

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## THE MEDICAL HISTORY OF A STATE

In the memory of many old retired doctors are stored stories of pioneer days in Texas, Arizona and New Mexico, but these are never put on paper, the old physicians die, their household goods, books, papers, instruments are cleared by the second-hand dealer to make room for his successor, and a page of history is lost.

Two years ago I tried to gather together some medical biographical material, pictures, etc., and found that others were on the trail. Dr. John S. Turner, Dr. Theodore Windlandt, Dr. D. Alexander, Dr. M. Duggan, Dr. W. R. Tipton, Dr. E. J. Beall, Dr. J. D. Mitchell, Dr. Stout, were all interested, but had had no time. Some of these in their turn, are now dead, their researches undone, their reminiscences buried with them.

The Hon. Claude McCaleb, of Fort Worth, says he remembers when he lived 50 miles from a railroad and used to ride that distance for a doctor, generally getting him in time to tell what the man died of. He recalls the first operation he saw. "The old doctor was not a man who washed his hands

many times before operating, but did the operation and washed his hands after. Consultation was unusual, for the patient usually died before the second doctor was fetched." Dr. Daniel tells how, after the war, drugs were expensive and natural resources were tried, the people gathering willow bark, dewberry root, skullcap, etc. There was a good deal of malaria about and one patient was so thin that the dogs followed him about thinking he was a bone.

What I would suggest is that a State Medical Museum should be opened. A single room would suffice at first, and in it should be gathered old portraits of men and places, books (by men of the state), letters, instruments, and, as the place grew, perhaps a pathological room also.

The few glimpses I have been able to get of pioneer medical life in Texas, Arizona and New Mexico are convincing that time would prove the deep interest of such a museum to our coming generation of doctors.

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The war has given a tremendous importance to the whole subject of diet. Food ranks almost with bullets as a vital factor in the great struggle, and efficient utilization of the crops is just as necessary as big harvests. The Carnegie Institute of Boston is to conduct a series of experiments this fall to demonstrate whether men and women cannot maintain their powers on a smaller ration than has hitherto been accepted as the minimum. The Battle Creek Sanitarium has just finished a metabolism experiment lasting forty-five days, with ten subjects. The object was to determine the effect of different diets on the chemical composition of the blood. The results have not yet been tabulated.



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# Southwestern Medicine

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## TRAUMATIC HERNIA

BY

DR. JOHN E. BACON, Chief Surgeon, Miami-Inspiration Hospital, Miami, Arizona

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The purpose of this communication is to present for consideration but two points, out of the many that a discussion of hernia would imply. These are: the relation of trauma to the etiology of hernia, and a minor point which is believed to be valuable, in the technic of the operation for radical cure of the inguinal form.

The writer has been engaged in the hospital care of employees of mining corporations in this state since 1903 and the items of experience gained during so long a service form a basis for certain conclusions which surely indicate the prevailing trend of thought and action as regards conditions which are or are not personal injuries. From 1903 to 1910 the number of men served by the hospital department of the Tombstone Consolidated Mines Company averaged well above 300 at all times but during that time no case of hernia was seen in which accident was claimed as an etiologic factor.

From 1910 to 1914 serving an average of 1500 men in the employ of the Miami Copper Company, one single case of hernia was seen claiming recent injury. In 1915 the Workmen's Compulsory Compensation law became effective in this State and there were six cases claiming recent trauma as responsible for hernia. In 1916 the number rose to ten and so far in 1917 there have been twelve cases admitted to the hospital beside five cases claiming trauma as the cause of ancient hernias which were so obviously old that the point was not pressed.

At this rate of increase if the point of recent injury in all hernias presented by employees of corporations using from four to six thousand men is maintained, the question of hospital expense, compensation payments, and suits for damages for personal injuries becomes increasingly important as well as the surgeon's responsibility for the occasional infection or recurrence.

The uppermost question therefore becomes: What is the real value of trauma as represented by lifting or straining efforts in the etiology of inguinal or femoral hernia, the other forms of hernia being so rare that

consideration seems superfluous? This question, though new to us by reason of our recent conversion to labor legislation, has been asked and answered in Germany and France for some time past, having attracted attention there as here by the sudden increase in the number of traumatic hernias after Workmen's Compensation laws came into operation.

William B. Coley, of New York, analyzing over 75,000 cases treated at the Hospital for the Ruptured and Crippled, deplores the term "rupture" as misleading since it rests upon a false conception of etiology, as the knowledge gained since 1890 in the course of thousands of operations for hernia, disproves the ancient theory of tearing or spreading of the structures of the abdominal wall as a factor in the production of hernia, and says that "hernia in the vast majority of cases is a disease rather than an accident. In other words it is due to a congenital defect, an open funicular process, or an abnormal size of a normal opening in the abdominal wall, and that this defect is the main cause of hernia while the exciting cause plays a minor role."

Accurate statistics are lacking as to the percentage of hernias in children below the age of five years, it being placed at from thirty to fifty per cent of those who later present fully developed hernias, but the experience of every physician will convince him that it is quite high and that the vast majority of them get well by simple truss treatment. These patients clinically well of hernia until adult life present a large number of traumatic hernias since the sac is always there and capable of being suddenly distended by unusual effort in predisposing postures.

Quite an extensive literature has grown up around this subject in the last few years to quote from which at length would unduly prolong this paper and therefore it seems better to present a summary of conclusions reached by Coley, quoting numerous European writers as well as many of our own investigators.

The predisposing causes as applied to oblique and direct inguinal and femoral hernias are:

1. Congenital sac.
2. Abnormal size of internal and external rings.
3. Under-development of the internal oblique muscle, transversalis and conjoined tendon.

The exciting causes are:

1. Unknown. Out of 4,780 cases analyzed, 3,102 testified that the hernia appeared without known cause. 1,695 attributed it to some specific case, lifting, straining, coughing, sneezing, blows or falls.
2. Anything that greatly increases the abdominal pressure.

Given then a congenital sac or a sac gradually acquired by protrusion through an abnormally large or weak ring, a hernia may appear for the first time as a result of lifting or straining, but this does not appear to



be the direct effect of any particular occupation since it occurs in those working on farms and in trade in proportional frequency to those engaged in industrial occupations classed as hazardous.

As an illustration of this occurrence permit me to briefly outline two cases.

E. H., Finn Miner.

J. Y., Austrian Miner.

Both were admitted to the hospital January 9, 1917, in evident pain, both were unable to walk, both had vomited and both presented very large left sided scrotal hernias. Both denied ever having had any inguinal protrusion or weakness before. These hernias were immediately irreducible but under relaxation by morphia and hot applications reduction was accomplished within a few hours. Both men were operated upon in January, 1917, and both presented the same conditions, a congenital sac presenting a definite constriction within the inguinal canal with recent minute hemorrhages and fresh adhesions between the sac and the tissues of the cord and scrotum.

Both cases made uneventful recoveries. If there is any type of case which is entitled to be called traumatic these were certainly examples and yet both patients had patent funicular processes which had existed since birth.

The courts both abroad and in this country have held, however, that hernia may be due to industrial accident, and are cases entitled to indemnity. In the foreign rulings in order to prove the relationship, the hernia must have been examined by a physician within forty-eight hours after its occurrence and must present evidence of recent origin. There must be proof that no hernia existed before the accident.

In Arizona, however, all that is necessary is to bring an action at law, produce witnesses of the accident, have any doctor testify that the man has a hernia and get some kind of a verdict. The corporation surgeon who treated the case first after the accident and has the only first hand information as to its appearance, the presence or absence of pain, shock, the reducibility, signs of extravasation of blood, truss marks and other evidence of its age, the condition of the patient, cannot be heard in court.

The purpose of bringing this subject up at this time will be lost unless it is mentioned that physicians are very prone to accept and agree with the ideas of the laity that hernia is frequently directly caused by accident, that in other words a man can "rupture himself" by lifting, which in a normal individual cannot be done.

With the increasing importance of the condition it becomes more than ever desirable that every industrial worker the subject of hernia should be cured by radical operation (and it is our practice to offer operative treatment to each case discovered without additional charges for hospital and surgeons' fees), and it is in a like degree desirable to so con-

duct the operation as to avoid recurrence in the largest possible number of cases.

Recurrence is due in our opinion mainly to two things. First: Failure to find a small tubular sac or the incomplete removal of a sac that has been torn and distorted during its separation from the cord. We have in the last year discovered two small thin sacs after having concluded that the protrusion must have been a direct hernia, and doubtless many of this kind have been overlooked in years past to become a potent factor in recurrence. We have also discovered one case in which a double sac existed only one of which may have been found. The second cause of recurrence we believe to be faulty suturing in the lower angle of the wound, leaving a space below the lowermost suture through which a direct hernia gradually forms. To correct this we have been using the following technic in the belief that it is a distinct advantage over the usual interrupted stitch.

Making the usual Bassini operation in all of its ordinary steps, after disposition of the sac and elevation of the cord, the deep sutures are placed as follows: The internal oblique and conjoined tendon are mobilized by blunt dissection so that the tendon comes easily over to Poupart's ligament and using the De Garmo blunt hernia needle and medium sized kangaroo tendon, and passing all sutures from below upward the first stitch is taken through Poupart's ligament right at its insertion into the spine of the pubis; this is then tied loosely, the needle then picking up the conjoined tendon high up and toward the median line, then back to Poupart's ligament and so on as a continuous stitch clear up to the limit that internal ring can be displaced up and outward where it is tied, or, as we prefer in a suitable case, the same suture is whipped back again with another series of stitches, in folding the first row, to the original knot to which the free end is tied making but one knot in the deep row. One or two stitches are then placed above the internal ring and the operation concluded in the usual way.

We have only been using this technic since last June and have only a small series of cases, some twenty-two, in which it has been applied, but we do not expect as many recurrences as is usual with the original Bassini technic. So far there have been none.

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THE USE OF AUTOGENOUS VACCINES IN TUBERCULOSIS

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BY

WILLIS R. SMITH, M. D., Associate Medical Director Homan Sanatorium

(Read before the El Paso County Medical Society, May 7, 1917.)

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The development of the treatment of mixed infection in tuberculosis has been only in the past few years. It is from the result of the work of Jockman, Reiche, Bonhr, and others, that we have concluded that mixed infection is responsible for chills, night sweats, irregular fever, and emaciation in tuberculosis. These symptoms are due to soluble toxins thrown into the circulation from an area locally infected rather than from a general bacteriæmia. Limbeck says as long as the infection is practically a tubercular one, even if it is acute, the white cells are unaffected, the leukocytosis of the third stage being the evidence of the development of mixed infection. I think a great many of the failures in the use of vaccines has been due to the fact that we did not keep clearly in mind what we wished to accomplish. The first consideration in all these cases is to produce an immunity, and I think this is best defined by Vaughan who says: "Acquired immunity due to recovery from an infection or occurring as a result of infection is regarded as the outcome of the development in the body during the course of the infectious process of specific ferments that on exposure immediately destroy infection. The vaccine is the same protein that causes the disease to be so modified that it will not produce the disease, but so little altered that it will stimulate the body cells to form a specific ferment that will promptly and quickly destroy the infected agent on exposure."

Corney has expressed his views as follows: "Because of the course of the disease, the rapid variation in temperature, the fact that extensive infiltration often develops in a few days and then disappears after a short period or leaves areas of caseation or softening, which data does not coincide with characteristics of tubercle bacilli, viz: slowness of growth and tendency to hold its ground, leads to the idea that other organisms than tubercle bacilli may be found in the lesions of pulmonary tuberculosis. Rapid emaciation, excessive weakness, cough, profuse expectoration, chills and night sweats are attributed to the presence of secondary pyogenic organisms." It is not my purpose in this paper to take up at length the role that mixed infection plays in tuberculosis. Mine is strictly a clinical report with these statements borne in mind. I have selected four types of cases and report one in each class. I purposely have selected all these cases in young adult females, making them as near the same type of patients as possible.



**Case One.** Miss B. Single. Age 27. Stenographer. Family history: Mother and father living and well; five brothers and three sisters all living and well. Personal history: Had always been thin, not so well developed as other brothers and sisters. Complained of being tired and not able to do her work as stenographer without being exhausted. No other acute sickness. Physical findings: Skin sallow. Apex beat normal. Slight venous stasis over upper part of chest. No retractions or depressions. Motion slightly diminished at right apex. Expiration normal. No glandular involvement. No hemorrhages.

**Percussion:** Right anterior, dullness marked down to fourth rib. Left anterior, marked dullness to second rib, slight dullness to fourth rib, dull along the lower edge of the sternum to half way down the nipple line. Right posterior, slightly dull to the fourth rib. Left posterior, dull to lower border of scapula.

**Auscultation:** Right anterior, rough, harsh breathing to second rib, moist crepitant rales as low as fourth rib. Left anterior, rales over the first rib, tubular breathing between second and third rib showing small cavity, coarse moist rales to fourth rib, then down side of the sternum extending half way to the nipple line. Right posterior, moist rales down to the fourth rib, prolonged expiration, marked on taking deep breath. Left posterior, coarse and fine rales down to the fourth rib. Larynx normal. Sputum muco-purulent. T. Bs. eight to ten to the field. Staph and streptococci very abundant; pneumococci common. Chills and night sweats every day. Temperature and pulse average for thirty days prior to the use of the autogenous vaccine containing staph, strepto and pneumococci.

Maximum temperature .....	104
Minimum temperature .....	96
Average temperature for the month .....	102
Maximum pulse .....	132
Minimum pulse .....	90
Average pulse .....	118

**After sixty days of vaccine:** **Percussion:** Right anterior, slight dullness to fourth rib. Left anterior, dull to second rib, slight dullness to the fourth rib; slight dullness down to border of the sternum. Right posterior, slight dullness to the fourth rib. Left posterior, dull to the fourth rib. **Auscultation:** Right anterior, harsh rales but less number of moist rales down to the fourth rib. Left anterior, moist rales down to the cavity but less moisture in and around cavity. Right posterior, mild crepitant rales down to fourth rib, showing less moisture. Left posterior, cavity hoarse rales, moist and fine rales down to second rib.

Maximum temperature .....	102 2/5
Minimum temperature .....	96
Average for month .....	99 1/10
Maximum pulse .....	120
Minimum pulse .....	80
Average for month .....	110

The high temperature on the 2nd and 19th shown by the temperature chart was due to pleurisy. Sputum reduced to about two-thirds in quantity, muco-purulent still. T. Bs. eight to twelve to the field. Few staph only.

**Case Two.** Miss B. Age 21. School girl. Family history: Negative except maternal grandmother had T. Bs., but patient had never lived in the house with her. Personal History: She was in Chicago during the past summer and had frequent attacks of intercostal neuralgia. Returned to North Texas in the fall and entered school; began to lose weight, feel badly, some sore throat and earache. Intercostal neuralgia continued (this to my mind was pleurisy and not neuralgia); soon began to have evening temperature, some night sweats. Upon examination the skin was dry and shiny over the apex of both lungs; apex beat normal in position. No venous stasis; slight retraction over the right apex; motion not limited; expansion normal; no glandular enlargements; hemorrhage, one small, about tea-cup.

**Percussion:** Right anterior, slight dullness down to the second rib. Left anterior, dullness down to the fourth rib; right posterior, slight dullness to the third rib; left posterior, dullness down to the fourth rib. **Auscultation:** Right anterior, some fine crepitant rales and slight prolonged expiration and increased voice sounds. Left anterior, some fine rales spotted about down to the fourth rib. Right posterior, slight number of moist rales, some fine and some crepitant, down to the third rib.

Left posterior, rales down to the fourth rib; some active involvement all over this area of the lung. Examination of the larynx showed right vocal cord with slight ulcer and thickening of the cord. Right ear discharging, slight perforation in the drum, probably tubercular. Sputum muco-purulent, three or four T. Bs. to the field Staph and strepto common. Mixed vaccine composed of staph and strepto given in this case.

Maximum temperature for the month (prior to vaccine)	102
Minimum temperature .....	96
Average for the month .....	100
Average pulse .....	94

Examination after sixty days of vaccine: Percussion, right anterior, slight dullness to third rib. Left anterior, slight dullness to the fourth rib. Right posterior, slight dullness to the third rib. Left posterior, slightly dull to the line of the scapula.

Auscultation: Right anterior, a few rales, coarse and very few down to the third rib. Left anterior, numerous fine and coarse rales down to the fourth rib. Right posterior, showed nothing but dry friction rub. Left posterior, showed a few coarse and some fine rales, but greatly diminished in number. Sputum about one-fourth quantity. Two T. Bs to the field, all mixed infection disappeared.

Maximum temperature for the last thirty days .....	101
Minimum temperature .....	96
Average for the month .....	98 1/5
Maximum pulse .....	100
Minimum pulse .....	80
Average for the month .....	98 1/5

Case Three. Miss W. Age 19. School girl. Family history: Mother died of T. B. Father living and healthy. Personal history: Had all the diseases of childhood. Complained of having lost weight and strength for the past six months. Had had fever for three months prior to entering sanatorium.

Physical findings: Skin healthy in appearance, dull parchment on the right side to the third rib and on left side to fifth rib. No venous stasis. No retraction or depression. Motion limited in the upper part of both lungs. Expansion diminished. Some glands in the posterior triangle of the neck. Had had several hemorrhages before the vaccine was given. Percussion: Right anterior, slight dullness to third rib. Left anterior, marked dullness to fourth rib. Right posterior, very slightly dull down past the angle of the scapula and to the fifth rib. Left posterior, dull to the fourth rib.

Auscultation: Right anterior, cogwheel respiration on deep breathing, no rales, to second rib. Left anterior, prolonged respiratory murmurs, fine and coarse rales to below fourth rib. Right posterior, harsh respiration, no rales but increased voice sounds to the third rib. Left posterior, coarse and fine rales down to the lower spine of the scapula, extending below the scapula next to the spine of the fifth rib. Larynx not involved. Sputum abundant and purulent. Ten to fifteen T. Bs to the field. Staph and pneumo abundant. Chills and night sweats. Vaccine of staph and pneumo administered.

Maximum temperature thirty days prior to the use of the vaccine .....	103 2/5
Minimum temperature .....	97
Average for month .....	101
Maximum pulse .....	112
Minimum pulse .....	88
Average pulse .....	98

After sixty days use of the vaccine percussion shows right anterior slightly dull to the third rib. Left anterior, dull to the fifth rib. Right posterior, no rales, only increased voice sounds. Left posterior, some fine rales scattered over the lung down to the fifth rib. Sputum diminished to about one-fourth the amount. Six to eight T. Bs to the field. No mixed infection appears except a few staph.

Maximum temperature .....	100
Minimum temperature .....	97
Average temperature .....	99
Maximum pulse .....	100
Minimum pulse .....	88
Average pulse .....	96

The striking thing in this particular case was that the right lung seemed to clear up entirely under the use of the mixed vaccine, so we are led to believe that the moisture in the right lung was primarily caused by a mixed infection.

**Case Four.** Miss R. Age 20. Single. Family history: Father and mother living. Two sisters in good health. Personal history: Began to lose weight about six months prior to coming to El Paso. Complained of pain in back of the right side in the lower portion of the right lung. Evening temperature and night sweats. Physical findings: Skin normal but dry. Apex beat normal. Slight retraction over both apices. Motion at both apices impaired. No glandular enlargement. Larynx normal. Had three severe hemorrhages after entering the Sanatorium in about three weeks. Temperature at time of admission was 103, pulse 110. The vaccine in this case was not started until the patient had been in the Sanatorium about six months and all T. B.s had disappeared from the expectoration and the lung condition was so far improved that there was nothing left but increased voice sounds and evidences of scar tissue to show that she had had tubercular trouble, but the constant presence of streptococci in the sputum led us to believe that this was the cause of the temperature.

**Percussion:** Right anterior, slightly dull to the third rib. Left anterior, slightly dull to the fourth rib. Right posterior, slight dullness to the fourth rib and around the border of the scapula. Dull from the seventh to the ninth rib down to the lower border of the rib, due to thickened pleura. This pleurisy found in this location accounts for the pain complained of some months before the real condition was found out.

**Ausculation:** Right anterior, few fine moist rales over the lung to the third rib. Left anterior, moderate number of fine rales and coarse rales to the fourth rib. Increased voice sounds. Right posterior, increased voice sounds to the fourth rib but no rales. Left posterior, coarse and fine rales extending down to the third rib. Increased voice sounds over the lowest border down to the base of the lung.

Sputum muco-purulent containing numerous strepto.

Maximum temperature .....	99	3/10
Minimum temperature .....	97	4/10
Average temperature .....	99	
Maximum pulse .....	100	
Minimum pulse .....	80	
Average pulse .....	83	

Vaccine of strepto given in this case.

After sixty days treatment the lungs showed nothing only some dullness on percussion as shown from the following plates but no moisture. The sputum showed no T. B.s and no mixed infection.

Maximum temperature .....	99	
Minimum temperature .....	97	3/10
Average temperature .....	98	3/10
Maximum pulse .....	86	
Minimum pulse .....	70	
Average pulse .....	78	

This patient gained about twenty-five pounds in weight and has been out of the Sanatorium for over a year. An examination within the last month showed her to be entirely well and weighing forty pounds more than at the time of admission to the Sanatorium.

From the reports of the cases they each show a decided improvement in temperature, pulse, and expectoration being diminished in all of them. All of the patients gained some in weight during the administration of the vaccine, and, from these and numerous other cases treated with the autogenous vaccine in the Sanatorium, I am convinced the the autogenous vaccine has a very valuable place in the therapy of mixed infection in tuberculosis.



## CARCINOMA OF THE MALE BREAST

With a Review of the Literature and Report On One Case

BY

CHAS. S. VIVIAN, M. D., Humboldt, Arizona

(Read before the 26th Annual Meeting of the Arizona State Medical Association, Douglas  
Arizona, April 18, 1917.)

Carcinoma of the male breast is not a common condition. Carcinoma in the breast of a young man is less common. Approximately 500 cases of this condition have been reported to date. (1) The largest number of these have occurred in patients from fifty to sixty years of age; other ages are by no means exempt, however. Lunn (3) reports the oldest case on record in a shoemaker of 91, who survived operation only a few days, to die of hypostatic congestion of the lungs. The youngest reported by Blogett occurred in a boy of twelve. Williams (9), Moore (12) and Coley (13) report cases occurring at twenty and twenty-two years. The youngest case in Judd's series (10) was twenty-five, the oldest eighty-five. Bryan (14) had a case in a boy of fifteen.

Between the years 1890 and 1911 there were eighteen cases of carcinoma of the male breast treated at St. Bartholomew's Hospital. Of these, one was under thirty, four were between thirty and fifty, and thirteen occurred after fifty.

In Connell's Table (table 1), based on twenty cases, the most frequent occurrence was between fifty and fifty-five, and next most frequent between twenty and twenty-five.

Bryan (table 2) shows, in a series of ninety cases, the most common age to be the same, i. e., fifty to fifty-five; the earliest age twenty and the oldest eighty-two.

Rodman (5) believes that not more than one per cent of the cancer of the breast occurs in the male, and cites the eleventh census, in which 839 cases were reported, of which 28 occurred in males. Of 1460 cases studied by Keyser (6), 10 affected the male breast. 307 cases treated at Johns Hopkins Hospital, numbered among them 3 in the male (7). Williams (9), who collected 15,481 cases of neoplasm, 2,422 of which were of the breast, found 2,397 females and 25 males affected, a ratio of, roughly, one to one hundred. Of these 25, only 16 were carcinoma.

Out of 609 cases of cancer of the breast reported by Judd, two only were males. 384 cases of cancer of the breast occurred in the Western Infirmary of Glasgow in ten years. None of these occurred in the male until after the age of sixty (table 3).

The Prudential Life Insurance Company, in compiling the deaths from

cancer throughout the world between the years 1909 and 1913, found 36 occurring in the male and 1737 in the female.

At the Huntington Memorial Hospital for Cancer Research (table 5), during 1914 and 1915 there were two males and forty-seven females that had carcinoma of the breast. During the same period there were 157 other male cases of cancer in other parts of the body, as against 159 female cases.

It will be readily seen from these statistics that there is a very wide difference in incidence in the two sexes. The explanation of this much less frequent occurrence in the male probably lies in the fact, as brought forward by Speese (1), that the gland in the male is in a rudimentary state and does not experience the conditions incident to pregnancy, which are so frequently the beginning of disease of the female gland.

Other etiological factors must then be responsible for these growths which do occur in the male breast. Warner (15) has laid great stress upon the changes of the economy co-incident with old age. Of these, he believes endarteritis to be the most potent, and in support of his theory cites a series of 206 cases of carcinoma, of which 50 were of the breast. In 29, or 58 per cent, the blood supply was sufficiently interfered with to affect the nutrition of the part. Of the non-cancerous breasts, only 25 per cent showed vascular changes. Another factor brought forward by him is an increase in connective tissue, especilaly in the amount of intercellular substances elaborated.

Heredity, undoubtedly, has its share in a certain proportion of cases.

Lastly, and probably of more importance, comes the role played by trauma in the production of cancer of the male breast. Just as constantly repeated slight trauma is sufficient for this condition in the female, so it produces it in the male. However, Murphy (16) believed that the condition can be and is brought about by mild trauma of one single occurrence, following which the reaction subsides in a week, to show itself malignantly after a lapse of three weeks to a month.

The pathological difference in the two sexes is one of degree, and bears out the idea advanced in the discussion of etiology, in that it develops most commonly from the ducts and less frequently from the acini, as is to be expected in a rudimentary organ. Neither does the pathology differ clinically from that of the female breast.

The growth is usually near and below the nipple, is small, hard and freely movable, in the early stages, slight growth, followed by adhesion to the surrounding parts, with fixation of the tumor and ulceration later is the usual sequence.

Diagnosis is made along identically the same lines as in the female, but should be made earlier and should include pre-cancerous conditions.

Discharge from the nipple is uncommon. When it does occur it is bloody, milky or puriform. Sudden growth with fixation is always an

alarming symptom, and Speese (1) believes that when it occurs in a middle-aged man it warrants a diagnosis of malignancy.

A small growth of the male breast is more easily identified than a similar one in the female; but, on the other hand, the male, not fearing this condition because of its rarity, does not consult a surgeon as early.

Because of the easy and early recognition in the male, prognosis should be better in the male than in the female, if it were not for the fact that the male breast does not offer the same protection, in that it does not encapsulate the growth by inflammatory resistance as does the female.

Treatment consists in early and complete radical removal, to be followed by the pathologist's report. Operative mortality is nil in early cases. Once having been removed in toto, the tendency to recurrence is not as common in men (1). If recurrence does occur, it shows itself in from a few months to six years, in the scar or frequently in the axilla, the opposite breast, or in the liver, lungs, or mediastinum.

The history of a case in the practice of the author follows: Patient, male, white, aged 22, presented himself for examination because of a small, hard, painful swelling of the left breast, situated directly under the nipple and about the size of a hickory nut. The skin was freely movable over the mass, and the nipple was not retracted, neither was there any discharge from the nipple. There were no papable glands.

F. H. Maternal uncle, at the age of 65, living and well; at 55 he had one breast removed for a persistent lump thought to be carcinoma. Father, at the age of 67, living and well. Mother died at 49. She had left breast amputated for carcinoma eleven years before her death, a growth two inches in diameter being removed. No axillary glands were removed. She was ill more or less for the last year of her life, and much emaciated during the last six months. Six months before her death she was "taken with a pain in her chest, which came on during the night, and in the morning her arm and leg were paralyzed." The hemiplegia continued, unimproved, until the time of her death. Maternal grandmother died at 68. Eleven years before, a diagnosis of carcinoma of the left breast was made. This growth is known to have ulcerated, but no further details are obtainable. The patient's occupation is such that he is continually, during working hours, leaning upon and rubbing against an iron railing in an electric crane. The position he assumes brings this bar into direct contact with the left breast; the history is otherwise negative.

Six weeks after first noticing the growth, radical removal of the breast was done. The pathologist reports "A multiplication of the gland layers, with a tendency to lose their typical arrangements and to proliferate in groups. The primary tumor was undoubtedly benign and the malignant change in cells secondary."

#### *Conclusions*

1. Between one and two per cent of cancers of the breast occur in



the male. 2. Early and radical removal of the male breast which contains any suspicious enlargement is advisable.

3. In the case presented the etiological factors were that of constant irritation superimposed upon an hereditary tendency.

#### BIBLIOGRAPHY

- (1) Speese, J. Tr. Phila. Acad. of Surg. XV:9-26, 1913; same in Ann. Surg. LV:530-545, 1912.
- (2) Finsterer. f. Deut. Zeit. chir. LXXXIV:201, 1906.
- (3) Lunn. Trans. Path. Soc. London XLVIII:247, 1897.
- (4) Blodgett, Boston Med. & Surg. J., CXXXVI:611, 1897.
- (5) Rodman, in Keen, Surgery, 1908, v. IV, p. 1156.
- (6) Keyser, Lancet XXVIII:1403, 1904.
- (7) Warfield, Johns Hopkins Hosp. Bull. XII:305, 1901.
- (8) Lamb, D. S. Wash. M. Ann. X:250, 1911-12.
- (9) Williams, Lancet, II, p. 261, 310, 1889.
- (10) Judd. Surg. Gyn. and Obst. XVIII:289-294, March, 1914.
- (11) Connell, Surg. Gyn. & Obst. 4:13, 1907.
- (12) Moore, Austral. Med. Jour. XX:464, 1895.
- (13) Coley, Annals of Surg. XXXI:741, 1900.
- (14) Bryan, Surg. Gyn. & Obst., XVIII:545-546, May, 1904.
- (15) Warner, Surg. Gyn. & Obst., XXIII:413, 421, October, 1916.
- (16) Murphy, Surg. Clin., Chicago, III:569-574, 1914.
- (17) Schuchardt, Arch. F. klin. chir. XXXI:1; XXXII:277, 1885.
- (18) Dietrich, Deut. Zeit. F. chir., XXXIII:471, 1892.
- (19) Hansy, Wiener Med. Woch. XLIX:302, 1899.
- (20) McConnell, Jour. of Med. Research, Feb. 1910.
- (21) Manager, Inaug. Dis. Jena, 1901.
- (22) Gibson, Ann. Surg. Phila. LVI:471, 1912.
- (23) Carson, Proc. Roy. Soc. Med. Lond. VII, Clin. Sect. 120, 1913-14.
- (24) Welch, Lancet, Lond. I:1319, 1914.
- (25) McGrath, J. A. M. A. LXIII:1012-1018, 1914.
- (26) Levings, Amer. Jour. Surg. XXIX, February, 1917.

#### THE PASSING OF THANATAPHOBIA.

In peace or war traumatic medicine and surgery will pursue an even path, more especially in these days when men "mount up on wings like eagles" and dismount like falling bricks. But doctors in Europe have found that those who used to constitute the majority of their patients, the nervously diseased, have fallen off tremendously in number, and such falling means a shrinking of income more noticeable in hard war times. There are several reasons for this: First, fewer doctors are available, second, in sight of the horrors of war as revealed in returned soldiers, the ordinary patient is ashamed to go to a doctor with minor ailments; thirdly, money is harder to obtain and the doctor's fee and operations are put under the head of "luxuries." Fourthly, the fear of death is passing. Its power began to wane as the older theologians died, and now war has propped open the gates—so great is the onrush of dead heroes—that men actually, or vicariously by pure sorrow, face Death every day. There are many grief-torn ones who would willingly join the troops of the White Horseman thundering past. There are many old persons who feel half ashamed of lingering in Life's camp when the young have struck their tents and gone on beyond recall. So, curiously, the diseased, through familiarity with Death, have ceased to throng the rooms of those who kept him at bay with the Aesculapian rod.

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SMALLPOX

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BY

DR. I. J. BUSH, El Paso, Texas, Physician to the Eruptive Hospital

(Read before the El Paso County Medical Society Sept. 3, 1917.)

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Smallpox is an acute, infectious disease, characterized by an initial fever of about three days duration, followed by an eruption which passes to a papule then a vesicle and finally a pustule.

The disease was first described by Rhazes, an Arabian physician in the early part of the tenth century. It was known however long before this. It first appeared in Europe in the latter part of the ninth century. During the twelfth to the fifteenth century fearful epidemics of the disease swept over Europe, in many cases almost depopulating several countries. It was carried to Mexico in 1520 and has remained there in endemic form to this good day. In 1633 it appeared in Massachusetts and soon spread to the Indians where it raged with such severity that several tribes were swept away.

Smallpox is not a disease influenced by soil, climate or social conditions. It strikes down alike the king and the peasant. It occurs in the frozen North and the torrid South. The white man, the yellow man and the black man are alike the victims of its terrors. The disease is carried by direct contact with infected persons or clothing. Infection may occur at any stage of the disease but is most likely to occur after the appearance of the eruption. Some authors deny that it is carried during the febrile stage, before the appearance of the eruption. When exposed to the bright rays of the sun the virus of smallpox soon dies. Clothing and bed clothes of a smallpox patient can be thoroughly sterilized by exposure to a hot sun for two days. On the other hand, if packed away in a box or trunk in a dark room the virus will live for over a year. Several years ago, a man died in an out house on a ranch in New Mexico. The bed clothes were packed in a box and the room kept closed for over a year. Finally, the room being needed for storing grain, the rancher cleaned out the clothing and other articles and was going to burn it, when along came half a dozen Indians and to them were given the blankets. The result was an epidemic of smallpox on the reservation. There is little danger of contracting the disease in the open air, and especially in a dry climate like this. Direct contact is necessary in order to do so. I believe that a person can approach to within ten feet of a case of smallpox in the open, and be in no danger of contracting the disease. I once heard a physician telling a patient that the disease might be contracted from a distance of two blocks. I feel sure the Doctor is mistaken.

Some persons are much more susceptible to smallpox than others. Indeed there are well authenticated cases of a natural immunity to the dis-

ease. There are times too when persons are more susceptible than others. Persons have been known to be exposed many times, and not contract the disease, and finally succumb to the infection. During the past two years I have treated three men with smallpox who boasted that they had been exposed to the disease a hundred times in Mexico. I have heard of persons having a second attack but have yet to see a case and I do not believe that a person ever has two attacks. I regard all such cases as due to error in diagnosis. The disease has been said to be more fatal in the negro. I have not found such to be the case. The disease is generally milder in Mexicans than other people. I regard this as due to the fact that in Mexico a large proportion of the population have had the disease, as did their forefathers, and they have inherited a certain amount of immunity. At times conditions seem to be such as to favor a more rapid spread of the disease. Sporadic, mild cases will occur, here and there, and the disease shows very little tendency to spread, even in an unvaccinated community. At other times it blazes out into a fierce epidemic, with a high rate of mortality. Why this is true no one seems to know.

The chief anatomical changes in smallpox are found in the skin. The lesions begin about the third day, in the form of red spots. These rapidly become papular and have a firm feel, very much as if a shot was imbedded in the skin. The papule then becomes vesicular and then pustular. Sometimes the vesicle fills with blood instead of pus. This is the so-called black smallpox. The mucous membranes also become the seat of a lesion but it differs from that of the skin. It is in the nature of a diffuse infiltration. The membrane often becomes diphtheritic in character but pustules do not form. I have seen one case die from edema of the glottis, due to a virulent infiltration of the membranes of the throat. Abscesses and sloughing of the skin often occur. I saw one case in which the whole gluteus sloughed away.

The initial symptoms begin with fever and malaise. Often there is a chill. The symptoms come on rapidly and the temperature runs up high the first day of the disease. I once saw a case in which the temperature registered 106 the second day of the disease. Cases are on record where it went as high as 107. Often there is great prostration from the onset of the disease. This is especially true in hard drinkers. In cases of varioloid the initial symptoms are often mild and sometimes are so slight as to have been overlooked. Headache and backache are generally very pronounced. The patient often thinks he is taking grip. Indeed the symptoms of grip and smallpox are so nearly identical that even an expert cannot make a differential diagnosis in the beginning of either disease. The eruption makes its appearance on the third day and by the sixth or eighth day the disease has advanced to the pustular stage. As soon as the eruption makes its appearance the temperature drops and the patient experiences a feeling of relief from the aching in the back and head. Sore throat now becomes a prominent symptom and it is often so severe that the patient can only swallow liquids because of the pain. The eyes, too, begin to give



trouble at this stage and the swelling often closes both eyes. About the eighth day the pustules begin to shrivel up. They turn a dark yellow then brown and by the time the scab is formed it is black.

The eruption in smallpox may vary from half a dozen pustules to thousands. From an eruptive standpoint the disease is divided into three classes of cases, discrete, confluent and hemorrhagic. The discrete cases are generally mild in character. Varioloid belongs to this class of cases. Most of these cases recover if uncomplicated. Confluent cases are those severe cases where the eruption is so thick that the pustules run together. Sometimes the skin of the patient is a solid purulent mass. I have seen cases where there was not on the whole body a piece of sound skin the size of a dime. How these cases ever recover has always been a mystery to me. Yet many of them do recover. The stench from one of these cases at the time the pustules begin to ooze and dry out is anything but pleasant. It has an odor all its own and it is by no means heaven born. Sometimes the pustular skin will slough and come away in putrid sheets. A physician never feels so helpless as when he stands before a case like this. Also he never appreciates the great blessings of vaccination so much as at this time and with reverence he takes off his hat and thanks the great Creator for the gift of the immortal Jenner.

When the vesicles fill with blood instead of pus we have what is known as hemorrhagic or black smallpox. This is the most virulent form of the disease known. Ninety-five percent of these cases die. This is the "black death" that almost depopulated Europe during the middle ages. This class of cases usually die within twenty-four hours from the beginning of the eruption.

The diagnosis of smallpox, before the appearance of the eruption, is most difficult. The fever and aching simulate grip, measles, chicken pox and many other diseases. A high temperature and much prostration the first day of the disease should put the physician on his guard. Even after the eruption has made its appearance a diagnosis is not always easy. The most expert medical man will make mistakes in differentiating between smallpox and other eruptive diseases. Especially is this true of chicken pox. The physician who never made mistakes in diagnoses of this kind has never treated many cases of smallpox. The late Dr. Chas. Race, skillful as he was, made mistakes. Dr. Howard Thompson, whose skill as a diagnostician is second to none in El Paso, has made mistakes. I could name at least a dozen leading physicians of this city who have made errors of diagnosis in this disease. And I plead guilty to having made several. About a year ago I was called to see a dope fiend in a cheap dive on South El Paso street. He had an eruption much resembling smallpox. I phoned for Dr. Klutz and we carefully went over him and agreed that he was suffering from smallpox. I had him removed to the eruptive hospital. Next day, when I called, I realized at a glance that we had erred in our diagnosis, but for the life of me I could not make out what disease he had. Fi-

nally the superintendent remarked that he found the patient literally covered with lice. And the diagnosis was clear, and the joke was on the physicians. The animals had swarmed over the man's face, while he was in an opium stupor, and had bitten him so severely as to produce an eruption. Another case of supposed smallpox proved to be a syphilitic eruption. The diagnosis was made the second day after the man had been removed to the eruptive hospital and placed in the observation ward. One case of measles was diagnosed as smallpox and the patient removed to the hospital where he contracted smallpox. The proper diagnosis was made the second day and he was vaccinated but the vaccination failed to take. Chicken pox is more liable to be diagnosed as smallpox than any other disease. Often the very elect are deceived. In chicken pox we have a vesicle with very thin covering. In smallpox the pustule is firm and hard and multilocular. If a well filled vesicle of chicken pox is punctured with a sterile needle a drop of clear fluid exudes and the vesicle walls collapse while in smallpox such is not the case. Puncture a smallpox pustule and it still stands up hard and firm. This I regard as an infallible test in making a differential diagnosis. In chicken pox there are successive crops of vesicles. Also the vesicles vary in size. Such is not the case in smallpox. In a large majority of cases the vesicles of chicken pox contain a clear serum, while the pustules of smallpox contain pus. I have seen only two cases of purulent chicken pox.

The prognosis of smallpox is always grave. Uncomplicated cases of discrete eruption and varioloid generally recover. As a rule the fewer the pustules on the body the brighter the prognosis. Patients having varioloid often do not feel sufficiently ill to go to bed. I have never seen a fatal case of smallpox in a person who had been successfully vaccinated. Welch says that in pre-vaccination times one-tenth of all children born died of smallpox. The same author says that in different epidemics of the disease in the United States the mortality has ranged from fifteen to sixty per cent. Where the disease occurs endemically as it does along the border and in Mexico the death rate is not so high. An examination of the books of the El Paso city eruptive hospital shows that during two years from June first, 1915, to June first, 1917, two hundred and sixty-eight cases have been treated, with thirty deaths. Forty-four were confluent and forty-three hemorrhagic. Of the hemorrhagic cases twenty-six were fatal. Of the confluent only three proved fatal. Only one discrete case died. That death was due to edema of the glottis. I have yet to see a heavy drinker recover from smallpox. They usually become delirious within a few hours after the onset of the disease and die within forty-eight hours. Whiskey and smallpox simply will not mix. One patient boasted that he had drunk enough whiskey to float a steam boat. I told him frankly that his drinking days were over. He died twelve hours later.

There is no specific treatment for smallpox. I begin by giving them a calomel purge. Codein is valuable to produce sleep and quiet the restlessness. During the fever stage aspirin is valuable for the relief of the head

and backache. Later, stimulants are generally required. I rely on strychnia and whiskey. Whiskey is generally well tolerated. I have tried all kinds of sprays for the relief of the sore throat, without much benefit. I now rely on small doses of olive oil swallowed slowly. As soon as desquamation begins I give daily sponge baths of a one to five thousand solution of bichloride of mercury. For the eyes I use a two per cent solution of boric acid. Occasionally a hypodermic injection of morphine is necessary to quiet the delirium. There is no known remedy to prevent pitting. If the disease is at all severe pitting will occur in spite of all that can be done. Some two years ago a certain medical charlatan who was a refugee from Mexico at the time had his wife go down with an attack of smallpox. She recovered and had no pits. He used this fact as a means of advertising himself as a smallpox specialist. Investigation disclosed the fact that she had a light attack of varioloid and did not have over a dozen pustules on her body. Yet, so thoroughly did he advertise the case that over a dozen women of this city have asked me why I did not learn from him the remedy for the prevention of pitting. Verily he that tooteth not his own horn the same shall not be tooted.

#### DISCUSSION ON DR. I. J. BUSH'S PAPER

The discussion was opened by Dr. Anderson who commented on the fact that though alcohol made a man a much poorer risk, yet it was one of the few approved drugs in the treatment. He stated that he was a little afraid of strychnine as one was too apt to overstimulate. He remembers having seen one case with the papules discrete one side and hæmorrhagic on the other.

Dr. Willis Smith spoke of having seen two cases of the disease in women at term. Both were delivered. One baby had a corneal involvement and lost the sight of that eye.

Dr. Crouse discussed the benefits of the various methods of vaccination. He prefers the endermic.

Dr. Prentiss advises opening the vesicle and treating it like any other surgical wound, thus obviating the frequent infection and making the course of vaccinia much shorter, and milder.

Dr. Ramey advised tracheotomy or intubation for edema of the larynx.

Dr. Strong urged the use of belladonna and atropine in the treatment of this condition. Some people are very resistant to vaccine, he said.

Dr. Tappan wondered if the granular conjunctivitis seen so often after the disease bore any relation to true trachoma. It has all the appearance of it and is treated just the same way.

Dr. Gallagher said that he had seen several cases with corneal pustules in which the vision was lost.

Dr. Bush in closing said that one of the best things for use in the eyes was sterilized castor oil and another boric acid. Cleanliness is very much to be desired in this location as this avoids most of the eye complications once so common and so distressing.



## THE MEDICO-SURGICAL AND LEGAL ASPECT OF A FEW INJURY CASES, AS SEEN THROUGH THE EYES OF THE CORPORATION PHYSICIAN

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BY

DR. W. A. HOLT, Chief Surgeon, Old Dominion Hospital, Globe, Ariz.

(Read at the Twenty-Sixth Annual Meeting of the Arizona Medical Association, Douglas, Arizona, April 18, 1917.)

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These are the days when the cliff dwellers and the cave dwellers of the medical and surgical world get together and hold friendly pow-wows.

At the meetings of our county, state and national societies the papers read and cases exhibited invariably deal with the successes; seldom are the failures or poor results put forward. In this respect we are quite like the stock speculator who talks long and loud anent his profits but says little or nothing of losses.

There will be nothing in this paper at all scientific; it will, however, bring to the minds of many of us a realization of the fact that we are passing through a time that is a revolution in our professional work.

This change probably affects the doctor who is engaged in corporation work rather more than it does him who has a secure private practice. However, the latter should not ignore the trials and tribulations of his professional brother, for sooner or later he will be affected by the medico-surgical evolution that is going on.

In the last half decade changes have arisen in the social, professional and economical life which require new arrangements of ethics, laws and professional practice for their solution.

These new economic conditions affect very materially the medical men in a community and up to the present time the industrial physician most.

One of the new conditions is that some form of workmen's compensation law has already been passed in more than half of the states in the Union and there is small doubt that before long such laws will have been passed in every state.

Our own state has a compensation law that probably is the most unsatisfactory in any, due almost entirely to its indefiniteness—that is, the injured man may elect to choose either the compensation law or the common law; and he usually elects the one which insures him the biggest piece of coin. This unsatisfactory law adds very much to the trials and tribulations of the industrial physician.

Compare this legal indefiniteness with the law of:

New York which limits disability damages to \$3,500.00 and for death \$5,000.00.

Ohio which limits disability damages to \$3,000.00 and for death \$5,000.00.

Massachusetts which limits disability damages to \$4,000.00 and for death \$5,000.00.

Pennsylvania which limits disability damages to \$4,000.00 and for death \$5,000.00.

In the handling of injuries at the works of our mines and smelters I regret to say that we are frequently confronted with such a large number of obstacles, i. e., the laws, the societies and unions, the relatives and friends, and not the least is the capitalization placed by the patient himself upon his injury so that he dictates what we shall and what we shall not do, and as a consequence he, and these conditions, are making surgical cowards of some of us.

Injuries to the industrial worker viewed through the eyes of the industrial physician are apt to appear distorted, and possibly badly misjudged. This may be due to the fact that we have not as yet become educated to the proper interpretation of injuries since the days of the compensation law; again possibly we have been duped so many times by the cunning and clever malingerer that we are biased as soon as these cases come under our care.

Before I cite a couple of cases I wish to say a few words of the shyster lawyer and his equivalent in our own profession, the damage suit doctor. They are what might be called unnecessary evils. And, together, they complete a vicious circle. The former has been trained for such work and probably should not be too harshly criticised, but his consort, the damage suit doctor, is without doubt a willing accomplice of the shyster and the ambulance chaser, and I feel that he should be stigmatized by the profession.

It is common knowledge that in every community doctors may be secured to serve the purpose of any person.

As illustrating the statements of some of these damage suit doctors, let me mention briefly the case of a young man, a miner, who would not return to work after three months time following a double herniotomy which healed by first intention and with no complications. He was taken to two members of the profession in this state, one of whom made a written statement that he had advanced tuberculosis as a result of his operation and had but a short time to live. Another said he had disintegration of the blood due to blood poisoning acquired at the time of operation.

Another case of incipient senile cataract in an old employee. The company officials were advised of his condition and of the inevitable loss of vision. Being an old employee he was taken out of the mine and given work on the surface at the same wage. Occasional examinations showed the usual progress being made in the opacity of the lenses. After 18 months, while having ample vision to go about his affairs, he seeks the

shyster lawyer who in turn conducts him to members of our profession and they make statements that his cataract is due to an injury. The conclusion is that these doctors have been poorly trained or are the willing tools of the shyster lawyer.

There are black sheep in every large flock, and I shall not attempt to deny that there may be a few in our own state who are deficient or warped in mentality and morals, but I claim with pride that the personnel of this body is as near ideal as can be attained by the independent judgment and careful selection of an efficient Board of Censors.

The citation of cases, I am well aware, is prone to be monotonous; however, I will ask your forbearance while I briefly speak of two cases and exhibit plates of them, showing unsatisfactory results due to the handicaps mentioned.

First, a young man, a miner, caved on; upon admission to the hospital he was found to have a compound fracture of tibia and fibula, punctured lung from several fractured ribs and a large scalp wound. He was profoundly shocked and his condition was critical for two weeks. The soft structures of the leg were badly lacerated from ankle to knee and were prone to hemorrhage at each dressing. No attention was given the leg other than sterile dressings and a pillow splint. Because of the extensive laceration of the soft parts, there being several large wounds and numerous blebs of the skin and a proneness to hemorrhage, no attempt was made to align the bones or apply traction. An immediate picture showed a fracture of the tibia at the lower third with a piece which is a cross section of the tibia, about one inch long, displayed backward deep into the substance of the gastrocnemius muscle, which is seen in the lateral view. The fibula is fractured just above the malleolus and again at the lower third. The object in citing the case and presenting the plates is to show the heroic efforts of nature to repair the damage as is shown by the unions and bridges of callus.

In this particular case there was no avenue by which traction could be applied, except that by nail extension which was lucidly described in text and by plates in the October, 1916, number of *Surgery, Gynecology and Obstetrics* by Dr. Frederick G. Dyas of Chicago, who credits Steinmann as being the originator. Following his technique this case would have been ideal for the procedure of driving a nail transversely through the os calcis so that it would protrude about two inches on either side of the skin. To each end of the nail a copper wire loop is attached to which traction apparatus is applied.

Unfortunately we have gathered from experience that our industrial injury cases have learned that any additional trauma done to them by the hospital department, regardless of results, is heralded as an additional asset. And it further corroborates the statement made earlier that these industrial injury cases are prone to make surgical cowards of some of us.

The next case is the plate of a man injured by a premature blast.



His injuries were many; one of which was the breaking of his muck stick and a piece of it, four inches long, and one and on-half inches in diameter, was driven into his lung; however, the particular purpose of exhibiting the plate is to show the large number of rocks embedded in the soft tissue of the hands without producing any discomfort, and are not discernible or palpable two months after injury. You will also readily note several osseous conditions that are abnormal and call for operative interference. This man is of a nationality that is crafty and cunning and knows too well the value of his deformities and consequently declines absolutely to accept such surgical work as is indicated. However, on the morrow of the day that he receives a big lump sum from the company, for which he has been playing trump cards, he hies himself away, is run through the repair shop, comes out in good condition and has money to burn.

Finally, the writer is fully aware that he has told this body nothing that they did not well know before. And especially is he aware that he has offered no solution for the untoward conditions mentioned.

The intention of this paper is only to try more closely to focus your attention on the fact that the industrial physician does not always have satisfactory control of his injury cases.

In conclusion I will ask of you, that when these cases come under your observation, please to have a heart and step on the soft pedal.

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### REPEOPLING EUROPE

There is no obstetrical Hoover to regulate the number of births, or assign a reasonable amount of offspring to each household, and there is general alarm just now as to a possible failure in filling up the war-depleted populations. The journals are full of counsel concerning not only the newly-born but pre-natal influences. In Detroit, the obstetricians have gone so far as to develop a plan for the collection and distribution of human milk, the milk being obtained from private patients and unmarried pregnant women.

Some, with Roosevelt, would have large families; others share Kipling's views and would have fewer children and those of better physique, while a third party exists who ask sarcastically of the State as of negligent parents: What have you done with those you had? Were they well fed, clothed, had they any share in the land they cultivated? Any house entirely theirs of the homes they built? Was an honest fight made for their sakes against venereal disease, drug addiction and drunkenness? Are not plague, war, famine God (?) permitted, man tolerated conditions to keep the people within the food yielding possibilities of the world. Honestly, why do you want a throng of men who are simply "getters and begetters?" Is it not for your defence and for cheap labor?

A comparative study of these three attitudes would not be amiss, for an immense population does not constitute a great kingdom any more than numerous offspring a strong and prosperous household.

# Southwestern Medicine

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All articles must be made exclusive to this journal. Reports of Society Meetings are asked for from the Secretaries.

Items of interest, with the name of the sender will be acceptable.

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## EDITORIALS

### SOME SURGICAL DEVELOPMENTS OF THE EUROPEAN WAR

One of the outstanding changes in the practice of surgeons of the English and French armies is the change in their attitude towards immediate operating for gun shot wounds of the abdomen.

Prior to this war there had developed among army surgeons a strong tendency to treat gun shot wounds of the abdomen conservatively. The arguments in favor of this policy were oftentimes proven by statistics. Tuffier states that "if the personnel of the medical staff is not such that a gun shot laparotomy could be carried to a successful issue under normal circumstances, such could not be expected under the stress of war." We are inclined to believe that some of this change of opinion has come about because the lines have been more stationary, consequently the hospital units have not been changing locations frequently.

It is also possible that the entry of more civilian surgeons, who have universally been accustomed to operating on these cases immediately, and who have been well prepared to do this line of work, has something to do with the change of attitude towards this class of wounds. Sir George H. Macon, Surgeon General of the English army, states that "there is but

little evidence of wounds of the small intestine healing spontaneously, and post mortem evidence of healed wounds of the small intestine is wanting."

Another development of this war has been the tendency of the great majority to return to the antiseptic treatment of wounds instead of the aseptic. The development of Dakin's solution in the treatment of compound fractures and other serious wounds has certainly been a step ahead of anything that we have known along this line. From the experience we have had with it we cannot help but feel that it is far beyond anything we have had up to date, and is deserving of a thorough trial according to a definite correct technique, by all men who are doing emergency surgery.

Another development of real value has been the use of the X-Ray in the early diagnosis of gas bacillus infection. In many of the subfacial forms where crepitation cannot be elicited, the X-Ray has not only shown the presence of the gas infection, but also its extent, in this way enabling the surgeon to do just what was necessary and not open up large areas unnecessarily, to later become infected. It is also shown that these infections almost invariably start around the foreign body, when one is present.

If anti-tetanus serum needed any further proof of its efficiency, that proof certainly has been furnished during this war. For the first few months, tetanus was almost a scourge. Now, since the universal use of serum given as often as possible with first aid dressings, it has almost been eliminated.

One of the disappointing features, however, of the war, is the lack of any developments along the line of vaccine or serum to combat gas bacillus infection, which has now been demonstrated to be due to a number of different organisms. As yet, early and free incision, removing splintered bone and foreign bodies, with the continuous irrigation with Dakin's solution, is the only preventive treatment. However, according to Tuffier, this has reduced the incidence of gas gangrene almost ninety-five percent.

From a strictly surgical standpoint, we believe that the above developments are among the most important of the present war.

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*Observation on Types of Response in Treatment of Syphilis of the Central Nervous System.* Homer F. Swift, American Journal of Syphilis, July, 1917.

From a pathological standpoint, the author classifies syphilis of the nervous system under three forms:

(1) Vascular, in which the essential lesion is an endarteritis; (2) Exudative peri-arteritis; (3) Parenchymatous degeneration of nerve structures.

According to their response to treatment, the cases are classified into:

(1) Early meningitis; (2) later forms of exudative involvement; (3)



tabes; (4) paralytic dementia. In each of these, typical cases are cited, showing varying degree of response to treatment.

The most striking features of the article are the emphasis laid on the analysis of each individual case, and treatment according to the individual peculiarities.

Persistent treatment is emphasized, Case No. 2 extending over a period of five years, during which time sixty-two doses of salvarsan were administered, finally resulting in clinical cure.

Treatment varied all the way from potassium iodide to intraspinal injection of salvarsanized serum.

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#### DR. McBRIDE'S RESIGNATION

All of us regret exceedingly the resignation of Dr. McBride as Editor-in-Chief of Southwestern Medicine. The resignation was received on August 19th, but not accepted till September 1st, because the Board of Directors hoped he might reconsider. This Dr. McBride felt he could not do, so his resignation was finally accepted.

Dr. McBride is the pioneer publisher of the Southwest, having started the New Mexico Medical Journal before the establishment of the Bulletin of the El Paso County Medical Society and the Journal of the Arizona Medical Association. It is largely through his efforts that the combination journal, Southwestern Medicine, was finally established and therefore we are sorry that he could not see his way clear to continue editing the journal.

Dr. G. Werley, El Paso, is acting Editor-in-Chief till the Board can elect a new man to fill the editor's chair.

In the future the Board assures all members and subscribers that the welfare of Southwestern Medicine, which belongs to all of us, will be the sole object, as it has been in the past while under the editorship of Dr. McBride.

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#### BUSINESS AFFAIRS

The Board of Directors not only regret the resignation of Dr. R. E. McBride but of Dr. B. E. Galloway, of El Paso, as Business Manager.

Dr. Galloway sent in his resignation for July 1st, but it was not accepted till August 1st, because there was no one to be had as business manager. Dr. Galloway kindly continued the management during August, and resigned because he could not give the time necessary to Southwestern Medicine and attend to his practice. There was no doctor in El Paso, or elsewhere that we know of, who could give the time necessary to manage the Journal. It has been found necessary to have the business manager and the printer at the same place. Since no doctor could be secured, it became necessary to turn the business affairs of Southwestern Medicine over to a business firm. After mature consideration this was done by your Board of Directors. The business of the Journal was leased

to Messrs. d'Allemand and Gibson, the former gentleman being secretary of the Ad Club, and an advertising expert, and the latter an expert collector, who is conducting a doctor's and other collecting agency.

The lease was made for three years, because the lessees would not take it for a less time. This was done by the unanimous consent of the Board of Directors.

As viewed by your Board, the lease is a most excellent one, the Board having absolute control of all advertising matter; the paper, the printing, the appearance, and the policy of the Journal. Ample provision is also made for expansion as the Journal prospers financially.

The Editor-in-Chief has absolute control of all reading matter that appears in the Journal.

There are two apparent defects in the lease. One is that illustrations must be paid for by the author, and the other is that no provision is made for the necessary running expenses of the editorial department; such as stationery, stamps, etc. Both of these objections were unavoidable because we could not get a better contract. Very few journals are now paying for illustrations, nearly all requiring the author to pay for cuts if used. This because of the enormously increased cost of publication. Even if we could have gotten a doctor management, we could not have furnished illustrations free in the future. Illustrations will be furnished the author at cost.

The lease gives to the business management (the lessees) the sum of \$1.00 per member of all the combined societies. This is certainly little enough under the present cost of publication. We believe that all members should pay \$2.00 per annum to the Journal. Arizona has already agreed to do this. The El Paso County Medical Society will do the same, and this subject will be brought up before the New Mexico Medical society meeting, at Las Cruces, in October, and the Southwestern Medical and Surgical Association at the Albuquerque meeting in December.

This extra \$1.00 per member, would buy stationery, stamps, etc., for the editor and sub editors, and pay the editor a small salary if deemed advisable, or might be used to furnish illustrations to contributors to the Journal. The war will require many sacrifices from all of us, and surely we should be glad to give this much to make the Journal safe and sound for the future.

So far as the publication is concerned, the Journal is now in a sound financial condition, but there are no funds for the needs outlined above. The good financial condition of Southwestern Medicine, is mainly due to the excellent self-sacrificing work done by our former business manager, Dr. B. E. Galloway, who turned over his books and the business affairs of the Journal in perfect order. We extend him our sincere thanks and appreciation, because he richly deserves both.

## TEXAS NOTES AND NEWS

Dr. F. B. Evans and Dr. F. Brady, formerly on the medical staff at Dawson, have joined the medical reserve corps and been assigned to duty at Fort Bliss, Texas.

Dr. Howard Thompson, Dr. M. O. Wright and Dr. G. Werley, spent several weeks fishing in the Glorietta mountains during August.

Dr. B. L. Sweet, formerly with the county hospital at San Antonio, as laboratory technician, resigned and is in charge of the laboratory of Drs. Brown & Brown.

Dr. H. E. Stevenson, Lieut. Col., in the line service with the Texas troops, has left to join them at the cantonment.

Dr. W. W. Waite and family spent several days at Cludcroft.

Dr. E. B. Rogers and family have returned from California where they spent their vacation.

Dr. G. Ranniger, of Oscura, N. M., was a visitor to El Paso the middle of August.

Dr. Lynch, of Midland, who is First Lieutenant of the reserve corps, has been called to duty at Fort Bliss, Texas.

Dr. F. E. Shine, of Bisbee, spent some time in California, during August.

Dr. M. B. Wesson has joined the medical reserve corps and is expecting to be called in service soon.

Dr. J. R. Gilbert, and family, of Alamogordo, N. M., spent their vacation in the east.

Dr. Wilkinson passed through El Paso on his way to Nacozari after spending sometime with his family in Albuquerque.

Dr. E. H. Ervin and his oldest son spent a month on the Great Lakes.

Dr. W. R. Jamieson and family spent their vacation in Cludcroft.

Dr. Paul Gallagher, First Lieutenant of the Medical Reserve Corps, has been assigned to Fort Bliss, Texas.

Dr. E. S. Bullock, of Silver City, N. M., with commission of Captain, has been assigned to Fort Bliss.

Dr. C. M. Hendricks, of the Medical Reserve Corps, has been ordered to training camp in the east.



Dr. J. A. Rawlings and family spent some time at their ranch at Mountain Park.

Dr. E. J. Cummins has joined the Medical Reserve Corps.

Dr. H. H. Stark, through an invitation by the Colorado Ophthalmologic Congress, read a paper before that body on August 9th, in Denver.

Dr. Will Rogers has been appointed by the county commissioners to fill the office of county health officer, vacated by Dr. E. J. McCamant, who has been commissioned as Major in the Texas National Guard Unit.

Dr. J. A. Pickett and family spent a month in Indiana and Kentucky, visiting relatives.

Dr. J. P. Kaster, chief surgeon of the Santa Fe Lines, Topeka, Kansas, was a visitor in El Paso the first part of September.

Dr. Craig, of Santa Rosa, N. M., made a professional visit to El Paso the first of September.

Dr. Branch Craige and family spent the vacation in California during August.

Dr. J. G. Moir, of Deming, N. M., visited in El Paso on September 2nd.

Dr. L. L. Miner, of Tyrone, N. M., while attending the Mayo clinics at Rochester, Minn., received word of the serious illness of his child, and left immediately for home.

Dr. S. E. McDaniel, local surgeon of the E. P. & S. W., at Tularosa, N. M., was in El Paso the latter part of August.

Dr. E. R. Carpenter made a professional trip to Douglas the latter part of August.

Dr. J. R. Moore, formerly of Old Mexico, was in El Paso during the month of August, from where he went to Bisbee, looking for location.

Dr. J. L. Taylor, Major in the Sanitary Corps of the Texas troops, left El Paso about September 3rd for active duty in Fort Worth.

Dr. T. J. McCamant, Major in the Texas National Army, left about September 1st for Fort Worth for active service.

El Paso Chapter of Red Cross have arranged to serve sandwiches and coffee to troops passing through El Paso to other parts of the country.

## ARIZONA NEWS

Many important changes have occurred among the medical practitioners of this state since the declaration of war. Most of those below will be ancient history to the readers of the magazine, but they are worth recording.

From Miami, Arizona, Capt. John E. Bacon has been called to active duty at San Antonio, Texas. Dr. Watts and Dr. Miller, of his staff, have been commissioned in the Officer's Reserve and will soon be at the front. It is reported that an entirely new staff will be installed at the Miami-Inspiration hospital.

Dr. Conover, formerly of the Miami-Inspiration hospital staff, has located in Phoenix, Arizona, where he will be associated with Drs. Brown and Sweek.

Dr. R. D. Kennedy, of Globe, has received his commission with the rank of Captain and is on active service.

Other doctors from Globe, who await their call to duty, having applied for commissions, are Drs. Sturgeon, Kirmse and Gunter.

The profession of the entire state will rejoice in the promotion of Dr. A. M. Tuthill, formerly of Morenci, who was made a Brigadier-General of the regular army. Dr. Tuthill's service was in the line and not the medical department and his former position was that of a Colonel of the National Guard.

Dr. Wm. H. Sargent, of Phoenix and Dr. J. J. Malone, of the same place, have received commissions and assigned to the School of Roentgenology in Los Angeles for training, following which they will, no doubt, be placed in active service. Capt. Wm. B. Bowman has charge of the training school in Los Angeles.

Among the new members of the Board of Regents of the University of Arizona, the many friends of Dr. John W. Flinn of Prescott will be glad to note his name. No choice more satisfactory to the medical profession of the state could have been made. The entire Board of Regents, with the exception of Dr. Whitmore, were replaced. At the reorganization meeting of the new Board, Dr. Whitmore was elected chancellor of the University.

Supt. John R. Walls, of the State Hospital for the Insane has engaged, as his assistants, Dr. Llewelyn of St. Louis and Dr. Covington of Phoenix. Dr. Covington will be the pathologist.

The Mohave County Medical Society reports that Dr. A. L. Tilton has been recommended for commission in the O. R. C., with the interesting comment that, during his absence his practice will be cared for by his confreres.

*Dr. H. J. James.* The medical profession of the state suffered a distinct loss in the death of Dr. H. H. James, director of St. Luke's Home for Tuberculosis, at Phoenix. The cause of death was nephritis from which the doctor had suffered for two years.

Dr. James came to St. Luke's Home at the beginning of the year 1914 and his energy and enthusiasm in anti-tuberculosis work soon made itself felt throughout the State. He took an active part in the re-organization of the Anti-Tuberculosis Society and in the meetings of that organization.

Born in Canada in 1884, he graduated from the Toronto School of Medicine in 1907; during the next five years he was engaged exclusively in tuberculosis work in sanatoria of Canada and this country; he came to Arizona in 1912, and practiced in Ray for two years, but embraced the first opportunity to take up his chosen field again, accepting the position of Medical Director for St. Luke's Home in 1914.

## NEWS

The New Mexico Medical Society will meet in Las Cruces October 4th, 5th and 6th, next. Dr. McBride is busy arranging an interesting program.

The Southwestern Medical and Surgical Association will meet this year early in December in Albuquerque. The exact date has not yet been announced. Let everyone make plans to attend and boost the organization.

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## BOOK REVIEWS

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### TRAUMATIC SURGERY

By John J. Moorhead, M. D. F. A. C. S. Adjunct Professor of Surgery in the New York Post-Graduate School and Hospital. Octavo volume of 760 pages with 522 original illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth \$6.50 net. Half Morocco \$8.00 net.

The compilation in one volume of the various areas of the human body heir to traumatic injuries necessarily compels the author to touch only many seemingly important points. The opening chapter of this work is well worth the price of the volume. To the general practitioner the little things that have potential grave features are often of intense concern due to his lack of dealing with them in a proper manner. This chapter, devoted to the little things, is clear and concise. The chapter on the graver sequences of joint injuries is extracted mainly from Murphy's Clinics, as to illustrations. Arthroplasty is illustrated, and the finer details of post-operative treatment, so essential to success in this serious type of surgery, is neglected. Sprains and strains are admirably dealt with. The chapter entitled special fractures is especially useful. That on injuries to the spine, while in the main an excerpted one is so replete with personal observations of the author, a broadly experienced surgeon, that it is made one of the most valuable portions of the text.

That portion of the volume devoted to traumatic neuroses shows a clear brief analysis of Bailey's work upon this subject. To the railway, mine and general corporation surgeon this is an admirable resume of the work of others and contains as well the author's observations. The conclusion of the book is devoted to medico-legal phrases of traumatic injuries. On the whole Moorhead has summarized personal experience along with exhaustive extraction from various monographs, such as Kanands, Murphy's Clinics, etc., in an extremely interesting and concise manner. The reviewer recommends the volume highly to his colleagues. It is well printed, charmingly illustrated, well proof read, and entrancingly concise, sometimes even too brief on a subject one deems important.

—H. C.



**FOOD FOR THE SICK—A MANUAL FOR THE PHYSICIAN AND PATIENT**

By Solomon Strouse, M. D., and Maude A. Perry, A. B. W. B. Saunders Company, Philadelphia and London. 1917.

The first part of the book gives a concise review of the general principles of nutrition and dietetics, with good reference lists of the chemical composition and caloric values of foods. Diseases of the various systems of the body are next taken up in order, the physiology and pathology of each condition given as far as it relates to indications for diet and detailed menus are given with the principles involved. I was interested in the chapter on diabetes, as it is practical and should be of great service to men treating such cases. Particularly good is the list of foods arranged according to their percentage composition of carbohydrates, but all the articles are useful and the book is both valuable and practical.

—E. C. P.

**PREVENTIVE MEDICINE AND HYGIENE (MILITARY EDITION)**

By M. J. Rosenau. Appleton, New York. 1917. Illus. Price \$6.50.

This wise leader in the ever increasing foot paths to health keeps one truth constantly before us—that sanitary perfection means co-operation of the individual, the family, the community, and state authorities. A man and his house may be kept absolutely clean, but his neighbors may have uncovered garbage or stagnant pools to his detriment. A community may strive for health, but if natural resources are not guarded, its epidemics, epizootics are not checked, then it also works in vain.

There is hardly an enemy left unearthed in Rosenau's book. Those of the struggling settler, the small farmer, the town dweller, the officer of health and the scientific agriculturist are ably dealt with. It is so simply written, that the layman can understand it, yet the scientist profits by reading it.

With regard to the military section, it is true that more battles are won by sanitation than by tactics, and, until late in the nineteenth century far more men died of preventable diseases than bullets.

Preventive medicine in application to the camp, of necessity, takes a special phase. I have seen a body of two thousand men encamped in one large building (Mobilization Camp, Syracuse, New York) which of course necessitated the most strict discipline.

I have carefully examined this section of Rosenau's text and find that it covers the following subjects: A general outline of the success of the present energetic efforts put forth to insure health as contrasted with that of fifty years ago. Examination of the recruit first by the recruiting officer of the line, then by the surgeon at the recruiting depot. Taking of identification data. Organization of the Medical Department outlining the duties of the medical officers and the various divisions of the medical service, such as Ambulance, Field Hospital, Sanitary and Base Hospital Corps, giving their action in battle, camp on the march and in barracks. He takes up the subject of pay, equipment, ration and training of the medical department, in my estimation covering the above fully and concisely.

Because so many men are forced to live in such a small area, usually where modern sanitary conveniences are not to be had, the soldier is subjected to constant danger from certain diseases, such as typhoid fever, dysentery, diarrheal diseases, and a vast host of similar infections. Venereal diseases always form a large proportion of the work. The author in a most able manner deals with these problems.

The articles on the Sanitation of the March, Selection of the Camp Site, Sanitation of Semipermanent Camps and Barracks are of great importance and, like the other articles in this section, are well written and complete.

This supplement furnishes an excellent reference work for new officers of the reserve corps and the junior officers of the line.

—C. C.

**THE SOLDIER'S ENGLISH AND FRENCH CONVERSATION BOOK**

By Walter M. Gallichan. Lippincott, Philadelphia. 35 cents.

When there was question of giving Testaments to troops departing from England, Lord Roberts reminded friends and societies that every ounce counted in a knapsack when carried by a tired soldier, so the separate Gospels were circulated instead. The lightness of Gallichan's booklet is its first recommendation, its second, the keeping to what is necessary and not including phrases concerning "the hat of my aunt's gardener" and "the mustard of my female cousin." The pronunciation is given, but, as the author says, this does not always help, in fact, a pronunciation of the pronunciation is sometimes required.

The terms given will do for camp and field, but are too abrupt for society. "Voulez-

vous" would not do for "Veuillez ayez le bouté de—" nor "Avez vous"? for "Est-que vous en avez?" But mingling with the French will soon teach the necessity of lingual frills, and the booklet is a useful every day companion to the soldier who has urgent needs and whose great object is to be understood at once.

—D. W.

### POLIOMYELITIS

By John Ruhrah, M. D. Professor of Pediatrics in the University of Maryland Medical School and the College of Physicians and Surgeons, Baltimore, M. D., and Erwin E. Mayer, M. D., Instructor in Medicine in the University of Maryland Medical School and College of Physicians and Surgeons. Cloth, pp. 287 with 118 engravings and 2 plates. Philadelphia, Lea & Febiger, 1917. Price \$3.25.

This volume is a compilation of the literature on poliomyelitis, and represents our present knowledge of the disease as gleaned from over 3,000 papers and monographs on the subject. No claim is made by the authors for originality, they merely offering a working volume to the practicing physician—and they have succeeded in producing one that is invaluable.

The history of the disease, the pathology, and the nature of the virus are briefly touched upon; the chapter on epidemiology is extremely interesting as the various theories are described in an unbiased manner. The view, that transmission is by direct contact is of course given first place, but the theory that rats through their fleas are the responsible agents for spreading the disease is backed up by some almost unanswerable arguments.

The remainder of the book is devoted to the diagnosis and treatment of poliomyelitis, and as the most striking symptom of the disease is the paralysis, and furthermore "the most striking thing about the paralysis is the fact that it is so unsymmetrical," the authors have gone into great details with explanations and pictures of the various types of paralysis and have been just as liberal in the use of photographs in explaining the various exercises used in the relief of the paralysis.

The impression left after reading the book is that the authors believe that very few physicians recognize all of their cases of poliomyelitis, as it is easily confused with practically every ailment mankind is subject to, and that practically the only cases diagnosed are severe ones that leave paralysis.

Anyone can read the book without an effort, as every page is entertaining as well as instructive.

M. B. W



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It is made under the direction of Dr. J. F. Schamberg, of Philadelphia, and has the approval of the Council on Pharmacy of the American Medical Association.

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**PATHOLOGICAL LABORATORY**

P. O. Box 1328  
PHOENIX, ARIZONA



# Southwestern Medicine

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## THE BLOOD PICTURE AS AN AID TO PROGNOSIS AND TREATMENT IN TUBERCULOSIS.

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BY

RAY E. THOMAS, M. D., Phoenix, Arizona.

(Read at the Eighth Annual Meeting of the Arizona Anti-Tuberculosis Association, Douglas, Arizona, April 17th, 1917.)

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The study of the cellular elements of the blood of tuberculous individuals is by no means recent. In 1906 Klebs called attention to its value, in a paper read before the American Society for the Study and Prevention of Tuberculosis. In 1908 Bushnell and Truholtz recommended the estimation of Arneth's index as a guide to the amount of exercise a tuberculous patient might safely be allowed.

A little later Webb made a study of the percentage of lymphocytes in a large series of cases in various stages of the disease. His cured cases averaged 41.7%. Those progressing unfavorably only 27.5%. He then used a very ingenious method to produce an artificial lymphocytosis as an aid in treatment.

Wright, in 1911, stated a high percentage of lymphocytes to be a very favorable prognostic index.

Hultgen, in studies carried on about the same time, reached similar conclusions.

Ringer in 1912 says that Arneth's index is a valuable aid to prognosis but is misleading in 5% of cases. Myer, Solis,-Cohen in 1911-13 studied the effect of various drugs, oils and tuberculin on the blood picture of a small number of tuberculous patients. There are many others to whom credit is due for research in this field: Minor, Gilbert, Watkins, Miller and Reed, Brosamlen and others.

The question most frequently asked by the tuberculous patient and his relatives of the physician is, "What chance have I to get well?" And it seems to me that any means at our command which will enable us to answer this question more intelligently should not be ignored. Here in the Southwest many of us have numerous cases of tuberculosis which, for one reason or another, cannot have the advantages of sanatorium treatment.

Careful inquiry leads me to believe that a large proportion of doctors unconnected with sanatoria, and some who are so connected, are treating tuberculosis without the assistance of the blood picture.

In order to convince, if possible, those who consider this procedure unnecessary, let me report, very briefly, the studies on fifty private cases now under my care or observation.

These cases were taken as they came and divided clinically into three classes:

1. Progressing unfavorably or unimproved.
2. Improved.
3. Apparently arrested.

The blood examinations were made by Mr. Boynton (of the Pathological Laboratory at Phoenix) who was unaware of the clinical status of the cases examined. The results follow:

Class 1—Unimproved.

Fifteen cases.

Average Arneth Index, 72.

Average lymphocytes, 24%.

Class 2—Improved.

Nineteen cases.

Average Arneth Index, 64.

Average lymphocytes, 31%.

Class 3—Apparently arrested.

Sixteen cases.

Average Arneth Index, 57.

Average lymphocytes, 36%.

These figures need no comment, but I wish to add that in class one the Arneth was almost universally high and the lymphocytes low, with the exception of one case which also had syphilis.

In class two some cases showed a moderately high Arneth with a moderately low lymphocyte count, others showed a favorable Arneth with an unusually low lymphocyte count or vice versa.

This brings out a point which has apparently been overlooked by all the writers on this subject, and which to my mind is of considerable importance. That is, the Arneth Index on the lymphocyte count alone is of small value compared to the value of both considered together.

In class three the Arneth Index was universally normal or better (lower) and the lymphocyte count high.

Many of the cases studied have been under observation for a considerable period and it has been my experience that occasionally, upon the first examination, the physical findings and blood picture do not agree. The progress of such cases usually conforms to the blood picture.

From this brief study it would seem that the blood picture might be of considerable value in the treatment of tuberculosis by giving us a more definite indication of a patient's reaction to tuberculin, heliotherapy, exercise, pneumothorax, changes in altitude, etc.

Also, when taken together, the Arneth Index and lymphocyte count offer valuable help in prognosis.

## ROLLIER'S METHOD IN THE TREATMENT OF POTT'S DISEASE.

BY

JOHN W. FLYNN, M. D., Prescott, Arizona.

(Read at the Eighth Annual Meeting of the Arizona Anti-Tuberculosis Association, Douglas, Arizona, April 17, 1917.)

The remarkable success of Dr. A. Rollier in the treatment of surgical tuberculosis by the sun-bath has received some attention in this country, and has deserved a great deal more, because if, as he claims, every form of surgical tuberculosis can be cured whether the patient be young or old, the significance of this fact is not likely to be over-estimated.

The form of tuberculosis which Dr. Rollier treats most often is Pott's Disease, and the method he has worked out to combine immobilization and proper support of the back on the one hand, with the application of the altitude-sun-bath on the other, constitutes the subject of this paper.

But before discussing the particular application in Pott's Disease, it will be appropriate to describe what the sun-bath is in general. The patient's naked body is exposed to the rays of the sun. The first day his feet only are exposed, and only for five minutes at a time. But as the days go by the baths are increased both as to duration and as to the amount of body exposure. It is several weeks before the entire body is exposed for any considerable period. The graduations have been worked out with the most minute care, and are sufficiently cautious for the average case. It is always necessary, however, to observe the temperature and pulse as well as the subjective symptoms. Cases which do not pigment readily, or have a tendency to temperature require especial watchfulness. In the course of time the average patient will work up to three hours' exposure a day; which is the usual limit of tolerance, though occasional cases will stand five or even seven hours, especially in the winter season.

If the use of the sun-bath is the most characteristic feature of Rollier's treatment, it is by no means the only one which he considers of importance, for he continually speaks of altitude, the altitude-sun-bath, etc. The advantages which he ascribes to the first are several. In the first place, the sun's rays come through a smaller layer of atmosphere and are but little diminished in strength. This applies especially to the ultra-violet rays. In the second place, the rays have little dust or smoke to contend with, and relatively little moisture. For these reasons he considers that the sun's rays are about five times as effective at his clinics near Leysin, Switzerland, with an altitude of 5,000 feet, as they are at Kiel, which is sea-level. Then there is the stimulation of the altitude itself. To this he imputes the ability of his patients to undergo immobilization for months at a time without suffering from digestive disturbances. This in itself is a sufficient argu-



ment for altitude in the treatment of such localizations as Pott's Disease, where patients are not allowed to leave their beds or even sit up, for months at a time.

We now turn to the treatment of Pott's Disease. Since the lesions are so deeply situated as to be virtually inaccessible to the surgeon, the treatment has for a long time resolved itself into the immobilizing of the vertebral column. To quote Rollier: "In virtue of this principle, we applied at first, especially in the cases of children, great plaster corsets, which were furnished with windows according to the necessities of the case: notably at the level of fistulas so as to enable us to dress them, and at the level of gibbosity so as to reduce it by pressure, according to the procedure of Calot. As a matter of fact, as we have seen above, we have completely abandoned the plaster corset. We have our children profit by the general sun-bath, just as we do adults; we do not want the skin to be deprived of air and become atrophied as the muscles do under impermeable armor, nor, especially, do we want the expansion of the thorax to be hindered, as it necessarily is inside a plaster cast, and one knows what disastrous consequences such shackles imply for the development of the skeleton."

Rollier's abandonment of the plaster cast had two important implications. In the first place, it was necessary to supply a support which would be equally effective. This support was found in a series of straps and cushions by which the patient was fixed to his bed. And in the second place, since it was wise to permit some movement and the patient could not be always strapped down, it was necessary to supply trained attendants who would see to it that the patients did not sit up or adopt false attitudes.

The series of straps and cushions are somewhat easier to illustrate than to describe. There are the two cloth straps which go lengthwise of the bed and are fastened tightly at the head and foot of it. To these straps at the level of the chest there is sewed a sort of corset which is itself fitted with straps and buckles. When the corset is buckled up tight, as it is always at night and during much of the day, the patient is fixed flat upon his back and cannot turn over. The system of straps is completed by another which goes crosswise of the bed a little above the knees. This strap is also fixed to the ones which go lengthwise, and when fastened prevents all movement of the legs.

Beneath the straps there is a series of three cushions. The highest of these supports the head and shoulders. The lowest, which is made with a hole in the middle like a rubber cushion, goes beneath the pelvis in such a way that the pressure which would otherwise come upon the coccyx is transmitted to the more fleshy parts. These two cushions are filled with seed. The middle cushion, the one which goes under the protuberance, is made thicker and thicker as time goes on, so as to increase the pressure little by little. At first a cushion filled with sand is used, but later a simple wooden block covered with cloth is substituted. When this arrangement is well established, it constitutes a veritable dorsal splint, and the ideal method to

prevent and reduce Pottic lordoses. Little by little the deformed region is pushed back in toto.

As we have seen, the patient spends most of his time in dorsal decubitus. The ventral position has also certain advantages, and Dr. Rollier's patients are permitted to adopt it for a time each day. In the first place, it allows the back also to benefit from the sun-baths. In the second place, it develops the muscles of the vertebral grooves. In Pott's Disease, these muscles ought to constitute a solid counterpoise to the weakness of the vertebral bodies; and upon their development depends the patient's ultimate ability to do without artificial supports. Finally, eschar and patches of sphacelus are avoided, the patients with dorsal fistulas have the benefit of the light rays upon them.

In a sense the movements which are possible in ventral decubitus constitute a certain amount of exercise. But even so, when the time comes for the patient to get up and move about, the utmost care is necessary. At first he is permitted only to sit up for a short while each day. Then, after several weeks, perhaps, he stands up for the first time, supported by a nurse on either side.

Later he is able to get along without the nurses by using long canes, which he grasps always above the level of the shoulders, hanging from them, as it were, instead of leaning on them. Finally he does away with the canes and begins taking regular walks. It is a part of the system to develop the strength of the patients, so that there will be no relapse after they return to less favorable conditions of living.

But before this graduated exercise begins, before the patient is even permitted to sit up, all clinical symptoms must have disappeared; all fistulas must have completely closed; and the X-ray must have confirmed the clinical cure. The complete disappearance of the protuberance is not always obtained. Sometimes two or more vertebrae are solidly welded together. But before the case is regarded as cured, the contours under the X-ray must be clearly defined and any ossifluent abscesses must be reabsorbed or calcified.

The period required to obtain these results is ordinarily from a year to a year and a half. Among the case histories which Rollier cites, there are some of children, some of adults, and one of a woman over seventy-five years of age. Many cases were complicated with large abscesses and some with open fistulas. In some cases the dislocation of the vertebrae had been such as to induce complete paralysis, and it was weeks before they were able to move voluntarily hand or foot. Yet all these cases recovered health and strength. His statistics show, that of one hundred and ninety-eight cases of Pott's Disease treated between 1903 and 1913, no less than one hundred and seventy-one were completely cured; eighteen were improved; five were stationary, and only four died.

Such results make all claims of his seem reasonable. The question is now whether we can duplicate them in this country. It is my belief that

we can. And it is my belief, further, that Arizona offers advantages equal to those of the Swiss Alps, if indeed they are not superior. In Arizona there is much more sunshine. It is equally possible to give sun-baths at all seasons of the year. There is every possible altitude, including the one that Rollier has found so beneficial. What is needed further is only the clinical experience.

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## THE MILITARY SURGEON.

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BY

H. A. INGALLS, Major M. R. C., U. S. Army

Surgeon and Instructor, New Mexico Military Institute, Roswell, N. M.

(Read Before the Pecos Valley Medical Association, Portales, New Mexico, June 30th, 1917.)

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Now that we are involved in an almost world-wide war, with the certain knowledge that thousands of our profession must abandon home and practice to follow the flag wherever it may lead, it would seem that this is the time for us to seriously consider the duties which will devolve upon some of us when we forsake civil for military life.

It would seem, at first glance, that all physicians, trained as they are in the various departments of medicine and surgery and allied subjects, would have no difficulty in taking up the duties of military life that fall to the lot of the army surgeon, but special training is required, this only is to be measured by months and years, rather than days and weeks.

In private practice when called to a case, the conclusion is that the individual is sick, while in the army the reverse holds, the soldier being considered well until proven to be sick. This is one of the hardest of the earlier lessons to be learned in military life. A malingerer, (and the majority are artists when it comes to "faking") will "work" the inexperienced surgeon for a long time and thus attain his end, that of avoiding his duty.

In taking sick call the points to be considered are many. A company of one hundred and fifty men live within the space of an average city lot. Several men are quartered in the same tent. They eat at one mess and are closely associated in their daily duties. For this reason we must not err and send an infectious case to duty or quarters, for fear of evil results to the other members of the command. If a case is at all suspicious he should be held at the infirmary, or regimental hospital if detached, for thorough examination after the others on sick report have been disposed of.

The object of sick call is to make as rapid disposition of the cases as is consistent with good service, that the commanding officer may be advised as to the number of men available for duty. It is a safe rule to isolate



those showing an elevation of temperature until the exact cause of the fever is known, as it is much better to excuse a man from duty for a trivial condition, rather than take the chance of sending an infectious disease to contaminate others.

It must ever be borne in mind that the great duty of the army surgeon is to prevent disease; to keep the men of the command to which he is assigned in the highest state of physical efficiency and, when disease does appear, to prevent its spread by sending the case to one of the various hospitals, to isolate those exposed, and apply the art of sanitation for the destruction of the infection that others may not fall victims.

In private practice the water supply and the disposal of wastes are arranged for us by municipal authorities, so we give these subjects but a passing thought. With troops in the field, and on the march, the surgeon must arrange for these, if the health of the command is to be safeguarded. Under the existing conditions it is probable that the majority of the officers and men of the new army will have but little field experience in practical sanitation, and for this reason every member of this Association should make a thorough study of the simple chemical tests to determine the potability of waters and know effective means for the disposal of excretæ and other wastes, so that he will, if called to duty, know how to advise the selection of camp sites and the best method of sanitation for that particular camp. When in the advance, study your maps and ascertain the location of the local water sheds. Enquire of the local population, especially the physicians, as to diseases prevalent along the water supply and in the immediate neighborhood.

Review your climatology and be prepared to act as adviser to the commanding officer regarding the time for marches and rests, the diet in the different climates, and above all, the diseases to be anticipated and guarded against.

Minor wounds and complaints must be given prompt and careful attention that the soldier may not become incapacitated. Those too ill to travel should be transferred to a base hospital for treatment in order that the mobile forces may move on the receipt of orders to do so.

Sanitary inspections are of the utmost importance: the kitchens, mess halls and latrines should be inspected three times daily. There should be one general inspection each day covering the entire camp. The latrines should be burned with oil and straw each morning. The picket lines thoroughly cleaned daily and the waste hauled to a remote part of the camp site and burned. It is always well to have a line officer from each organization meet you during your inspection that you may call his attention to the sanitary defects so that he may order a detail to correct the existing condition. Latrines and picket lines should be changed as indicated. Straw and oil should be used for burning the ground along the picket lines.

For the protection of the medical officer, as well as to inform the

District Sanitary Inspector, all sanitary reports and recommendations should be made in writing and a copy retained in the surgeon's file. Should evil result from the failure of line officers to act upon the sanitary recommendations the blame will not fall upon the surgeon as he is protected by his copy and not subject to criticism as in the case of verbal recommendations.

On joining, first see the senior medical officer, and ascertain the uniform worn for that day, and enquire as to the method of reporting for duty and the more important customs of the service to be observed. Any, or all, of the experienced officers will gladly assist you in every way possible.

After joining, familiarize yourself with the index of the army regulations and the Manual for the Medical Department, that you may be able to refer quickly to the various paragraphs for instruction. Also study the Drill Regulations and Service Manual for Sanitary Troops, and Field Service Regulations.

Anything so vast as the army of the United States must have a system, so it is our duty to study and be sure that we are correct before we act. The surgeon who enters the service with the expectation of "bluffing" his way through, or who desires to change the regulations to suit his own ideas or convenience will most surely come to grief.

The army regulations and the manual for the medical department must be your constant aids. Here your duty will be described and you will be taught the supplies to which you are entitled, the method of making requisitions, reports, muster and pay rolls, the number of copies of each and to whom forwarded. Failure to thoroughly understand the paragraphs applicable in any case will only result in delay. As an illustration, we recall the case of a well known surgeon entering the service as a volunteer surgeon during the Spanish-American war, who, desiring supplies made a requisition on one blank form for medical, quartermaster, and ordnance supplies with the result that he received nothing. You who study your manual will not be guilty of such an error, and the troops under your care will not be made to needlessly suffer for want of needed medical and surgical supplies. In this connection it is well to mention that in the event of an emergency you are authorized to purchase supplies in the open market without awaiting the delay caused by the formal requisition.

The surgeon acts almost in the capacity of a father to the soldiers under his care. Their duties, recreation, mess; in fact everything for the day, week, month, and year are arranged for them by higher authority, so that they really become dependent and expect to act without thinking. To this end we must ever be alert in the interest of their welfare.

Unless watched and denied access to camp, unscrupulous vendors will solicit orders for over and under ripe fruit, infected milk, inferior ice cream, the most indigestible of pastries, and even imitation whiskey, with

the result that all sorts of digestive disturbances develop and the efficiency of the command is very seriously affected, which does not speak well for the medical officer. Juicy fruits should be permitted only in the mess; otherwise food value for flies is furnished by the contamination of the camp site.

In the event of venereal disease the soldier, or soldiers, infected should be confined to the limits of the camp and thus prevent spread on their part by association with women free from disease. The source of the infection should be traced and the case, or cases, reported to the civil authorities for action. If they do not remove the evil, a guard detail should be requested to place the infected women under military quarantine so that it will be impossible for the men to have access to the house or houses.

The duties of a junior medical officer are varied. If he has had special training, his duties may only be in the line of his specialty. In the average case he falls into the usual routine and takes his turn as Officer of the Day. In this event he reports with the old officer of the day (usually early in the morning) to receive any special instructions the administrative officer may have. It is then his duty to care for sick call; make sanitary inspections; inspect the preparation and serving of meals to the men of the sanitary detachment; to observe the stock of picket lines and see that they are in good condition, or if sick or wounded that they are receiving proper care; to see that the rears have been properly burned as testified to by the absence of ammoniacal odor; to take réveille and retreat and receive the report of the non-commissioned officer as to whether the men of the sanitary detachment are present or accounted for; to remain in close touch with the infirmary or hospital that he may be available in the event of sudden illness or accident; and to report immediately to his superior officer any sanitary defects that may prove harmful to the men of the command if not properly corrected. He should maintain a careful record of everything pertaining to his duties during his twenty-four hour tour, placing special stress on the physical condition of the men of the entire command under his jurisdiction and the general sanitary conditions, making recommendations for the correction of sanitary defects noted. A full and complete report will enable the administrative officer to issue special instructions to the new officer of the day should such be indicated.

We want to mention property responsibility. Do not sign for anything not received. Carry only such property as you are entitled to under the provisions in the manual for the medical department. Take it up and dispose of it as provided for in the manual. Maintain an accurate file of your vouchers, both for property received and for property disposed of. Carelessness in this matter might prove very embarrassing by the withholding of pay pending investigation of property shortage or irregularities.

Note all changes made in the army regulations, manual for the medical department, as well as other publications, and maintain a file of all orders



received, bearing in mind that orders are issued to be obeyed and not ignored.

Ever bear in mind that the efficiency of the army depends upon the untiring efforts of the medical officers. One careless surgeon may undo the splendid work of his associates.

History records many failures of well planned campaigns, due to the poor physical condition of the troops. Let it not be said, should a failure be recorded, that the medical department was responsible.

In conclusion we want to urge every physician, under the age of 55, and who is physically able for duty, to volunteer for service in the present crisis. By so doing we give the Surgeon General the opportunity to select the best we have to offer. It would be an everlasting disgrace should it be necessary for the War Department to resort to draft to secure a sufficient number to fill the quota of medical officers, so do your duty.

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## X-RAY THERAPY AND TUBERCULAR LESIONS.

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BY

JOHN W. CATHCART, M. D., El Paso, Texas.

(Read at the Eighth Annual Meeting of the Arizona Anti-Tuberculosis Association, Douglas, Arizona, April 17, 1917.)

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The high hopes of a wonderful universal cure engendered by the discovery of the X-rays have not all been realized, yet, slowly but surely, the science has passed from the purely experimental stage into that of a powerful remedial agent, and opposition is silenced in the face of enduring cures.

It is only within the past two years that the man not closely in touch with extensive facilities has been able to ensure the possibilities held out by Roentgen therapy.

With the advent of the Coolidge tube it has been possible for many to successfully cure various conditions hitherto subjected to haphazard and unscientific treatment. The ability to maintain gas tubes at the proper vacuum, rendered so difficult by poor exciting apparatus, was often the excuse for improper dosage given sometimes through ignorance, sometimes through inability to get the proper apparatus, whereas, today, with a Coolidge tube and control, a dose of X-ray can be measured as accurately as any other remedial agent entrusted to a pharmacist.

In our own work we have discarded the various pastilles and other measures for determining dosage, relying wholly on the distance of the part treated from the tube—the back-up spark of the tube and the mill-ampere meter-reading. On each case-card is recorded the exact dosage given at a sitting, so that, by reference to the card an almost exact determination of result may be gathered, and, by careful attention to these details, a good working technique may be acquired.

The superficial tubercular lesions most frequently encountered are: Lupus, adenitis, bone and cartilage involvements.

In 1907 there were as many opinions as there were operators concerning the healing value of the rays in lupus. Now, the consensus of opinion—in which I share—agrees in pronouncing it the ideal treatment. The cosmetic result is much better than curettage or cauterization, this being especially true in lupus erythematosus. As our technique in administering X-ray dosage has improved I have had ever less occasion to use the curette. My cases have run from the classical butterfly to extensive areas on the limbs and body, and one with great involvement of the mucous membrane of the vulva, has been recently and successfully treated.

The ease with which varying forms of lupus may be cured tremendously urges the treatment—these treatments varying in number from 3 to possibly 25, in the indurated type with numerous tubercles. We use a back-up spark of 6 inches with the tube at a distance of 10 inches, filtering the ray through one or two millimeters of aluminum, and give 5 millamperes for a period of 5 minutes, treating every other day until 3 treatments are given; then twice a week.

Schiff and Freund try to avoid visible reactions by using hard tubes and giving short sittings, with a several days' interval between each treatment. Hahn, Kummel and Kienbock think it better to raise a slight hyperæmic reaction, with strong, medium soft tubes.

Neisser has concluded that this method did not sufficiently guard against recurrence, and, in severe cases, where the epidermis and mucous membrane of the face is affected, he goes as far as superficial necrosis, and gives a number of cures which still hold good after years of observation.

Lupus of any variety will respond to X-ray therapy, and the skin entirely clear up, but it is well to look for recurrence and resume treatment if nodules reappear. J. M. Martin finds frequent, mild applications, raising only a slight erythema, give him the best results.

**ADENITIS:** Tubercular adenitis, met with most frequently in the cervical region, shows ever increasing good curative results. This is especially true of cases in the early stages. The glands become small and fibrous in cases which have not yet begun to break down. In cases advanced to suppuration, with sinus formation, or in which there is a post-operative sinus, much good may be expected. Though no action may be looked for upon the pyogenic organisms, the cells of the tubercles undergo atrophic changes with the formation of fibrous tissue which materially helps in clearing up the condition. The resulting improvement in the scar formation where the ray has been employed is an additional point not to be overlooked, especially upon an exposed or pressure bearing area.

**TUBERCULAR GLANDS:** In chronicity, the nodules will not always disappear, but become smaller and cease to give trouble. Where there is suppuration in acute cases, the gland may be made to undergo cheesy

degeneration, and, in some cases, where great suppuration necessitated drainage, successful cures have been made. Two or three treatments a week for two or three weeks will generally be found enough, using tube with 6 or 7 inch back-up and aluminum and sole leather screens. But, after a few weeks' rest, treatment may be continued until the desired result is obtained.

De Kraft gives very favorable results of X-ray therapy in tubercular glands. He uses hard, filtered rays and deprecates the use of massive doses, pointing out that a ray sufficiently strong to kill the germ would tend to lower the vitality of the neighboring structures, also that a ray too feeble would stimulate the propagation of the bacilli. After using the X-rays he follows on with high frequency currents because of their local effect in improving nutrition and raising resistance powers in the cells.

The tendency to a spontaneous cure of tuberculosis, particularly in children, is considerably hastened by this method.

In some of my early cases we were unfortunate in having telangiectasis follow the dermatitis, but, in recent years, with proper screening, this difficulty has been overcome.

Tuberculosis of the ribs is a condition frequently encountered, and a disease in which X-ray therapy should be given first and early preference, as the lesions may be made to completely subside and disappear. Also, this treatment stands out favorably compared with the long-drawn one of cur-etting, cauterizing and dressings. If the disease has reached the sinus stage, the X-ray still remains valuable, and will materially aid in shortening the disease. The patient who has one sinus treated for months and then, when a new focus appears, has it treated with X-rays, is the one who is truly grateful and appreciative.

De Kraft, I, Am. J. Electro-Therapeutics, Aug., 1916.

Knox, Robert, X-Ray Therapeutics and Radium Therapy.

Hardaway and Grindon, Cutaneous Therapeutics.

Martin, J. M., Practical Electro-Therapeutics and X-Ray Therapy.

McDermott, J. L., The Treatment of Nevus.

Symposium on Roentgen Therapy, J. A. M. A., Nov. 4, 1917.

Grubbe, E. H., Interstate Medical Journal, Oct., 1916.

Hazen, H. H., Interstate Medical Journal, Apr., 1916.

Murphy's Clinics, Vol IV., No. 1, 1915.



## THE AUTOSENSITIZED SEROBACTERIN

BY

W. O. SWEET, M. D., Phoenix, Arizona

(Read before Arizona State Medical Association April 19, 1917.)

The injection of foreign protein in the treatment of disease is a well known therapeutic procedure. Discussion and review of the literature will not be attempted in this paper.

Autogenous vaccines were used long before the work of Rosenow<sup>1</sup> explained why they are superior. The clinician had demonstrated to his own satisfaction, that there was a difference and that the difference was in favor of the autogenous vaccine.

In 1902, Besredka<sup>2</sup> introduced sensitized vaccines into medicine. The sensitized vaccine of Besredka was made from the serum of immunized animals; there are several objections to this method; it excludes the autogenous principle; it introduces a foreign serum, and antibodies or antiferments combined with foreign complement. These substances must be worked over and changed before they can be utilized by the body cells. Besredka proved that bacteria are more easily destroyed by the human organism if they are treated in this way. This accounts, to some extent, for the difference in reaction between ordinary vaccines and sensitized vaccines, which is observed clinically.

Jobling and Peterson<sup>3</sup> demonstrated that complement is a fat splitting ferment and digests the outer lipid membrane of bacteria. If we can carry forward parenteral digestion of bacteria without losing any of the product before their injection, we can let a large part of the disagreeable reaction go on in the test tube, and save our patients.

In 1913, it occurred to me to utilize the blood of the patient in sensitizing autogenous vaccines. This work reached a point where it could be used clinically, in the early months of 1914, and was first used at the Murphy Clinics in Chicago. Dr. Michael G. Johh<sup>5</sup> of Omaha, Neb., and others have independently reported the use of similar methods. My technic was defective and has been markedly improved. Dr. W. W. Watkins of Phoenix, Ariz., uses a much improved technic.

The organisms are cultivated on appropriate media (Vedder's starch or testicular-agar for gonococci, blood serum or starch for streptococci, blood agar for hemolytic and hemoglobin feeding organisms, etc.) until sufficient growth is secured. They are then washed down with normal salt solution, and shaken with glass beads to emulsify the bacteria. Fifty c. c. of patient's blood is then secured, giving from 20 to 25 c. c. of clear serum. A portion of this is tested against the organisms secured for com-

plement fixation powers. If fixation is pronounced the organisms are considered suitable for vaccine purposes; if fixation is negative, stock strains are tested which, if they react positively, may be used, if desired by the clinician. The living organisms are removed from the salt solution by centrifugalization and placed in a portion of the active serum; they are placed on ice for 12 hours and then in the incubator for one hour. They are then removed from this serum by centrifugalization, taken up in a small amount of .5 per cent phenol, sterilized in water bath, and standardized as regards number per c. c. Then the remainder of the patient's serum (usually from 5 to 10 c. c.) is added, and the dilution to the desired point completed with .5 per cent phenol. Usually this dilution is 10 billion per c. c.

The essential points in this technic are differential culturing; testing organisms secured for complement fixation, sensitization on ice and in incubator, using active serum, removal of this partially digested serum, addition of fresh patient's serum to the vaccine, after killing the organisms. It will be noted that the organisms are not killed until all the sensitizing has taken place.

In case of sputum vaccines, "Leutscher's" method of plating on blood agar is used.

The following cases have been treated. The nonsurgical cases were treated by Dr. O. B. Brown, and the surgical cases by the author.

*Bronchitis.* Twenty-six cases. Fifteen of these were complicated by tuberculosis; improvement was shown in ten of the tubercular cases within the first five doses, in seven of these, noticeable improvement was present before the tenth day. In the eleven cases of non-tubercular bronchitis, nine were completely relieved in less than seven weeks.

The other two cases showed marked improvement, but were not cured until tonsils and adenoids were removed in one case, and a marked pyorrhea was cleared up in the other case. It is advisable to have the teeth, tonsils, and nasal sinuses carefully attended to, at once, in all these respiratory infections. Dr. O. H. Brown reports (unpublished) that his patients, tuberculous or otherwise, show more rapid and more marked improvement if this work is done prior to and in conjunction with, the auto-sensitized bacterin treatment.

*Rhinitis, Sinusitis and Hay Fever.* Eleven cases were treated. Eight of these were diagnosed hay fever, these were treated by a combined method of a gaseous antiseptic and serobacterin, six of them were apparently cured and have no recurrence. Two cases required operative treatment and were referred to the rhinologist. The other three cases were infected sinuses; two improved but did not complete treatments. One of these cases was a physician, with symptoms of eight years duration accompanied by marked bronchitis. The patient is apparently cured, and has gained eight pounds in weight, and feels better than he has for eight

years. This case, like several others in this group, was sent to Arizona with a diagnosis of tuberculosis. The tubercle bacilli could not be demonstrated.

*Gonorrhea.* Fourteen cases, eleven females and three males. Eight of these cases were treated until all acute symptoms had disappeared and the gonococcus could no longer be demonstrated in smears or cultures. They were then operated and a complete cure obtained in every case. The other three cases of the women were apparently cured and did not require surgical interference. The entire eleven were typical cases of pyosalpinx. These cases will be reported in more detail, in a later surgical paper. The three cases in males were not treated for simple urethritis, but had marked involvement of bladder, prostate and seminal vesicles. In two cases, the seminal vesicles were injected with argyrol; at the end of five weeks, the gonococcus could no longer be demonstrated in cultures. The third case showed marked improvement but the gonococcus could always be demonstrated and can still be demonstrated. The patient is practically free from all symptoms, except in the prostate; he is forty-five years old and the prostate will be removed as it is quite large and is beginning to interfere with the passage of urine.

*Infected Wounds.* Seventeen cases. These were practically all staphylococci infections; the bacteria disappeared from the wound, as a rule, within five days after the first injection. These cases will be reported later in a surgical paper.

*Furunculosis.* Eight cases were treated. Five of these were patients who were having crops of boils extending over a period of from three to seven months; the infection promptly cleared up and none of these patients have had a recurrence. The other three cases were treated upon appearance of the first furuncle and none of them developed a second furuncle.

*Acne Vulgaris.* Three cases were treated. One was cured, one showed no improvement and one promptly grew worse.

*Cystitis.* Five cases not included in the cases of gonorrheal cystitis mentioned above.

*Arthritis.* Of five cases treated, two were apparently cured. Three showed improvement. One of the improved cases required an arthroplasty, which operation was entirely successful, the wound healing by first intention. Some of the improvement in two of these cases was due to the use of mercury. The two cured cases were not syphilitic.

Failure to get desirable results, clinically with biologics, is due to the substance used and the manner in which it is administered to the patient, and the unwise selection of cases. Our technic in making vaccines has improved and our knowledge of how to use them has also improved. Our clinical results are beginning to show this.

Many of the articles on vaccine therapy that have appeared in current



literature indicate a superficial knowledge of the fundamental principles underlying this treatment. This knowledge cannot be acquired entirely from clinical reports and clinical observation. Pathology and biology are the foundations of the treatment, and on that foundation clinical experience must be built.

It is a very significant fact, that 80 per cent of the cases seen by Dr. Brown and myself give a history of having been treated by stock "serums" or vaccines. Some of these cases were not suitable cases for bacterins in the first place, some of them were, and promptly improved when properly treated.

It is much better for the physician to avoid the use of bacterins, unless he is sure of what he wishes to accomplish. It is not honest to tell a patient that he will not be harmed, even if he is not benefitted. It is quite true that very little harm, if any, is ever done a patient when this method of treatment is properly handled. But a number of cases have come under our observation in whom we could not help but recognize that positive damage had been done.

It is impossible to lay down hard and fast rules in this treatment. We profit by our mistakes, but only when we recognize them and admit them, at least to ourselves. With these thoughts in mind, with the admonition that general directions are not to be followed literally, but with intelligence and sound clinical judgment, backed by a thorough knowledge of biologics, general directions are set down as follows:

- (1) Strict adherence to technic of manufacture.
- (2) Use them as early as possible in the course of infection.
- (3) Do not attempt to treat children under two years of age.
- (4) Do not attempt to use vaccines in old people, past the age of 60, unless the patient is very well preserved.
- (5) Do not give an initial dose sufficient to produce a marked local or general reaction.
- (6) Give your patient sufficient time to utilize each dose before another is added, this can be learned only by close clinical observation.
- (7) A dose of one billion is usually the proper amount to start with; if no reaction occurs, another dose at the end of 48 hours, of two billion may be given. This usually produces a slight reaction. An increase of one billion at each subsequent injection is a good general rule. This may have to be decreased or increased in order to maintain the same degree of reaction as first observed.
- (8) Ten to fifteen billion bacteria per c. c. is the usual maximum dose.
- (9) The serobacterin should never be given intravenously.

### *Conclusions*

(1) With the autosensitized serobacterin, the reactions, locally and generally, are much less than with any other method of injection bacteria.

(2) The stimulation of resistance and immunity is much more rapid and accompanied by less disturbance.

(3) Clinical results have been more favorable than with any other method used by the author.

#### REFERENCES

1. Jour. Infec. Dis., Jan., 1914.
2. Comp. Rend. Acad. des Sci. 1902, Vol. CXXXIV.
3. Jobling and Peterson. Jour. Exp. Med., 1914, XIX 5.
4. Watkins, Ariz. Med. Jour.
5. Murphy Clinics, Dec., 1914.

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### DENTISTRY'S SHARE IN PREPAREDNESS

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#### BY

EDWIN P. TIGNOR, M. D., D. D. S., Captain, Dental Corps, U. S. Army

(Read before the Arizona Medical Association meeting, Douglas, Arizona, April 18, 1917.)

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In this day of unrest, with the greater part of the civilized world at war, and when, after more than two years of patient forbearance, the American people have been called upon to mobilize their resources for the defense of their rights, it falls to the lot of the medical profession to prepare for their part in the war. Since the great object of military medicine is, first, to keep the fighting man in health and, second, when he becomes disabled through wounds or disease, to restore him to health in the shortest time possible, it becomes imperative that no branch of preventive medicine be neglected. It is chiefly in its character of preventive medicine that I will consider dentistry at this time.

It is a well known fact that serious organic diseases result from oral infection. Oral conditions which have a direct relation to the general health may be divided into three general classes; first, and of less importance than the others, is loss of function, due to diseased conditions of the oral cavity, and loss of the teeth with resultant improper mastication and digestive disturbances. Loss of teeth has long been considered by the military authorities of sufficient importance to warrant the rejection of applicants for enlistment. This condition is more serious in the army than in civil life because in civil life the defect may be overcome to a certain extent by the use of specially prepared foods while the soldier must be able to masticate the field ration.

The second class including the various neuroses resulting from irritation of the fifth nerve forms too broad a subject to be considered in a paper of this nature.

The third class includes two very prevalent pathological conditions occurring in the oral cavity: periapical infection and pyorrhœa alveolaris. These have a direct bearing on the general health because in *both*, foci of infection are present. In pyorrhœa, the infection occurs around the necks

of the teeth and results in a slow destruction of the pericementum (a modified periosteum) and alveolar process and the formation of pus pockets. As the pus exudes, it is taken into the stomach with the saliva and food and also reaches the blood current by direct absorption. Periapical infection occurs at the apex of the tooth root and, in 99 per cent of the cases, is a sequel of dental caries. Caries attacks the tooth crown and, if untreated, eventually reaches the pulp and destroys it. Then the root, an open tube, becomes an ideal channel through which infection may reach the tissues at the apex. If the organism is of a sufficiently virulent type, an acute abscess results. If, on the other hand, the organism is of a less virulent type, a chronic condition follows with little or no pain, so that the patient is not aware of its presence. This condition is frequently found when teeth have been filled or crowned without proper treatment or root canal filling. The organism most frequently found in this class of cases is the streptococcus viridans, and as the pus is in a closed cavity under constant pressure, this condition presents a very serious danger to the general health.

There are of course other channels than the oral cavity, through which infection may reach the vital organs. The tonsils play a conspicuous part in focal infection, but we have only two tonsils normally while we are blessed with thirty-two teeth. I am not alone in the belief that excepting venereal infection, more diseases have their origin in the mouth than from all other sources combined.

The condition of the mouth then has a very close relation to military efficiency. If, by eliminating oral infection, we can keep men healthy, then dental treatment properly directed adds just that much to the strength of the fighting force. The best dental treatment is prevention and this should begin in the public schools. Germany realized this fifteen years ago and since that time her young reservists have had frequent inspections and constant treatment by an adequate corps of dental surgeons. Is it not reasonable to believe that some of the physical vigor of her soldiers is due to healthy mouths? Individuals are more susceptible to dental caries during the school age than at any other period and if one can reach the age of twenty without dental caries, there will be little trouble in later life. This can be done by frequent examinations and attention to mouth hygiene.

While the importance of oral health has been recognized and many states have dental surgeons as inspectors in the public schools, and some have dentists on the state board of health, we still have to face the problem that the present generation has not enjoyed those privileges, and we must repair the damage that might have been prevented. It was my privilege to be on duty for four years at one of our large recruit depots. During that period about fifty thousand young men passed through the station. I did not examine all the mouths except for certain periods but I examined all for a sufficient time to find that fully 95 per cent needed



dental or oral treatment. The mouths of all were examined, however, by one of the surgeons and the worst cases, about 25 per cent, were referred to me. In this way I treated about ten thousand men. As it was physically impossible to treat all cases thoroughly, no attempt was made to fill small carious cavities but the treatment was largely confined to the removal of carious roots and large deposits of calculus and to instruction in mouth hygiene. Even with this limited treatment, the improvement was very marked at the end of two or three months. At one time a special record was made of the roots removed and they were examined to determine the percentage with periapical infection. The result was that during one month five hundred and two roots were removed. In two cases, one where the root canal had been occluded by secondary dentine and another where the canal had been properly filled, there was no infection, but the remaining five hundred showed evidence of pus at the apex. Five hundred foci of infection removed from the mouths of three hundred men in one month! If these infection foci are allowed to remain what happens? Men are suddenly called upon to meet the unusual conditions of field service—exposure lowers the resistance—and the various manifestations of pus absorption occur.

Dental work in event of war naturally falls into two classes: preparatory or preventive treatment and surgery. The preparatory treatment will largely be accomplished at the recruit depots and large training camps, along the lines already discussed. Lack of time makes only absolutely necessary treatment possible. The new trench warfare has made the second class of work very important indeed, resulting as it does in serious wounds of the face and jaws, with frequent loss of much substance. Excellent work is being done in the hospitals in Europe in this field. There has been established in Paris a hospital exclusively for the treatment of wounds of the face and jaws. The necessary funds for this hospital were contributed largely by American dentists, and American dentists are doing the oral surgery there.

In this connection I would like to mention the fact that even before this special hospital was established, in the early days of the war, the average time required for recovery from wounds was 10 days less at the American Ambulance than at the other hospitals in Paris. The treatment was the same in all hospitals except that in the American Ambulance all cases admitted had their mouths treated by dental surgeons. This is at least significant.

Having considered the great importance of dental treatment in the army, let us see what is being done to supply the necessary trained personnel and service. Dental surgeons will be drawn from several sources; the Dental Corps of the Army, the militia dental surgeons, the Officers' Reserve Corps, Dental Section, and from the profession at large through the Preparedness League of American Dentists. The Dental Corps which

was first established in 1901 was composed of 30 dental surgeons under contract, having the same status as the contract surgeons who at that time formed a large part of the Medical Department. This was increased in 1911 to 100; 60 first lieutenants and 40 acting or contract dental surgeons. This was again changed last year by adding the grades of captain and major, abolishing the contract status and increasing the corps to 1 to 1000 of the enlisted strength of the line, making a total of about 180. The dental corps has not been filled, however, since the number was increased from 30, and there are now only 88 members. This number is inadequate to take care of the army in normal peace time.

The militia dental surgeons should prove a very valuable addition to the regular army corps, and all militia organizations should have their full quota. Under existing law each state is entitled to one dental surgeon for each 1000 enlisted men of the line. As soon as appointed and mustered into the Federal Service, they are furnished with the same portable dental outfit used by the regular army corps. When the militia was first mobilized, last year, for service on the Mexican Border there were very few dental surgeons in their service and the only dental treatment available was such as could be given by the already overworked men of the regular army. Later many of the states appointed dental surgeons but some are still without this valuable branch of the Medical Department. From the available sources of information I have been able to gather the names of only 76 militia dental surgeons who have been on border duty. The states that have not appointed dental surgeons in the militia, and if I am not mistaken, Arizona is among that number, should do so at once. Aside from health consideration, there are few things that add more to the comfort and contentment of men than skillful dental treatment when needed.

The Dental Section of the Officers' Reserve Corps will eventually be a source from which dental service will be supplied but at the present time very few have joined that body, chiefly because the regulations governing it are not well known to the profession at large. There is, however, an organization which promises to be useful in a sudden emergency like the present. I refer to the Preparedness League of American Dentists. I quote from a letter just received from its chairman, Dr. J. W. Beach, of Buffalo, N. Y.:

"The primary object of the League is two-fold, first, that of preparing the mouths of applicants for enlistment who were rejected on account of defective teeth and who were unable to pay for the necessary dental service to meet army requirements, and we are proud to say that approximately fifteen hundred such applicants have thus been cared for by the members of the League throughout the country.

"The second object, that of forming Sectional Units for the study of oral and war surgery has met with hearty support by the profession the country over and these clubs are now formed and being formed through-

out the United States. Approximately twenty-five are now in operation.

"We are endeavoring to assist our government in filling its Officers' Reserve Corps, Dental Section, with representative and competent members. This work has progressed to a point where the Surgeon General's Department is co-operating with us and the League is empowered to receive applications for the Dental Reserve.

"We are arranging with the Red Cross to supply a Dental Unit with each Red Cross Base hospital throughout the country. This is a very important connection of the League and gives us a definite status in the great work.

"We are organizing a committee to formulate a plan whereby a dental company of League members may receive necessary military training similar to that of the medical profession arranged by the Council of National Defense, with the ultimate object of establishing at training camps a full equipment for dental service and oral surgery and of putting into practical operation instructions received at the Unit study clubs.

"We are endeavoring to shape our plans to harmonize with the Council of National Defense and are connected with that body by means of Dr. E. C. Kirk who is a member of the Council.

"We are particularly pleased to announce the addition to our Board of Trustees of Dr. Truman W. Brophy. It is needless to comment on the great value of this connection for the future welfare of our organization."

This subject would not be complete without some reference to the dental service of the Armies in Europe. At the beginning of the great war Germany was the only one of the belligerents who had an efficient dental corps, but the need was immediately recognized and steps taken to organize and equip such a corps in each of the armies. Canada had, within a year, organized and equipped an independent corps of two hundred dental surgeons.

The United States is in a better position than the European nations were at the beginning of the war both because of the high standard of the profession in this country and the large number of men available, as well as the fact that the Dental Corps of the army has sixteen years' experience on which to draw to meet the present emergency.



# Southwestern Medicine

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Volume I

El Paso, Texas, October, 1917.

No. 10

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All articles must be made exclusive to this journal. Reports of Society Meetings are asked for from the Secretaries.

Items of interest, with the name of the sender will be acceptable.

Books for review should be sent to The Editor, care of the Medical Library, 320 Roberts-Banner building, El Paso, Texas.

Advertisements of proprietary medicines must have had the preparations approved by the Council of Pharmacy, A. M. A.

All business communications should be addressed to Eugene W. d'Allemand, 609 First National Bank Building, El Paso, Texas, Telephone 2297.

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## EDITORIALS

### ALTITUDE AND HELIOTHERAPY.

The publication of a paper on heliotherapy in this issue recalls the need (emphasized by the undersigned in discussing this paper when it was read), of more accurate and scientific observation of this treatment in the Southwest. The factors in the sun ray which produce the beneficial effects are fairly well known, but we have no data regarding their relative abundance in the ray as it reaches us in this section of the country. Rollier and his pupils lay stress on altitude, partly because of its stimulant effect, but chiefly because they claim that at higher levels the therapeutic portions of the ray are more abundant. This recalls our contention, strenuously maintained for years, that the factors which make this Southwest country climatically desirable cannot be compared, statistically, with similar factors in other portions of the globe. Yet, for years, figures published by sanatoria in Switzerland, France and Germany, regarding the effects of altitude on blood and metabolism, have been quoted by many tuberculosis experts of Colorado, New Mexico and Arizona, as proving their claims for the superiority of high altitudes over lowlands, in the southwest United States. Such claims may prove to be true. We do not say they are untrue, but we do insist that as yet they have no scientific basis.

Webb's work on lymphocytosis was exceedingly valuable, but it had the defect that, in his comparisons between high altitude and low altitude investigations, other variable factors besides altitude entered and played their part. Gilbert's effort to check this work was more accurate, because his cases were so selected that altitude was the only variable. Blood pictures in Denver, Albuquerque, El Paso, Prescott, Phoenix, Tucson or Yuma, at altitudes varying from 7,000 feet to sea level, show no appreciable differences. Between Denver (5,200 feet) and San Diego (sea level) there are great differences; also between Yuma and San Diego, both at sea level, there are just as great differences. In other words, as far as lymphocytosis is concerned, the effect of altitude is insignificant compared to the effects of dryness and continual sunshine.

Now again, we cannot help protesting when heliotherapists in the Southwest assume, because Rollier secures his best effects at an altitude of five thousand feet in the Alps, that the same thing is true of the Rocky Mountains. This protest has recently been strengthened by direct, scientific and unbiased evidence. All students of sun treatment know that we look to the blue-violet portion of the ray for the therapeutic effect; that is, to the short wave, penetrating, ionizing, and, consequently, healing rays. It seems reasonable, and Rollier and his following insist, that we must seek those areas where the rays reach the earth in the greatest abundance. Rollier finds this to be at about 5,000 feet in the Alps. What is it in the desert Southwest? We do not know, and no one can, as yet, give a comprehensive answer. Drs. MacDougal and Spoehr of the Carnegie Desert Laboratory, have begun investigations which will throw some light on the subject. Dr. Spoehr found that the percentage of violet rays was very materially greater on the desert around Tucson, at an elevation of 2,000 feet, than on the nearby Catalina Mountains, at elevations varying from 7,000 to 9,000 feet, and that altitude does not increase the quantity of violet (therapeutic) rays which reach the earth, at least so far as the first tests showed.

MacDougal and Spoehr have devised a new method of measurement of sunlight by the use of a photo-electric cell. The galvanometer readings from such a cell are a better test of the physiological action of light than of any hitherto devised.

A special set of glass screens has also been perfected so that by their use the action of any series of rays can be considered.

From such investigations as these we may hope to learn something about our climate. Until we have more scientific data, we will continue to work in the dark.

—W. Warner Watkins.

Science, June 15, 1917.

The next meeting of the Southwestern Medical and Surgical Association, to meet in Albuquerque some time in December, should be the banner meeting of this Association. The Albuquerque doctors are a live bunch, and, I believe, we may expect one of the best medical meetings we have ever attended in that part of the country. We have always thought these meetings should be held in the several towns of New Mexico, Arizona, and West Texas, which are in a position to take care of the visitors, etc. There are many doctors who cannot conveniently leave their practice to come to El Paso every year, but would attend the meeting if held in a more convenient place and nearer home.

Let Arizona and West Texas turn out in full force and show the New Mexicans that we are with them heart and soul. Of course, when Arizona wants the meeting, then New Mexico and El Paso should respond with the same generous spirit. This is only just and fair, and creates enthusiasm and more cordial relations among the doctors of the Southwest not otherwise effected. If there has ever been a time in the history of medicine when we should all pull together, it is the present, when our country is engaged in the greatest war the world has ever known. It behooves every profession, business and occupation to act as a unit, and by so doing, to give better service to their country and to mankind.

Just one word about our membership. It has not grown as it should. Every licensed physician of New Mexico, Arizona and West Texas should become a member of this Association and help put it on a par with the larger associations of the East and Middle West, which cannot be done without your assistance. Our Association, however, is in very good condition, but every effort should be made at these meetings to increase interest in its organization. This can be greatly aided by the local physicians, where the meetings are held, making every effort to get the profession in their respective localities to join and attend. Let it not be said there are any slackers in the medical profession in this part of the country, whether in giving their best service to their country at home or in her ranks in Europe.

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—R. L. R.

Does the community need me most, does my family need me most, or does my country? The patriotism which seems to be instilled in the heart of every true American physician leads him to feel that his country needs him and is ready to answer the call regardless of community or family. One day he is determined to obey the impulse, the next day, apprehensions for the future of his family so pull at his heart that he is undecided.

We do not believe there is a physician in the length and breadth of the land who spends but a fleeting moment in thoughts of bodily injury or death, consequently, should he enlist, this question is rarely considered. It would be hard to believe we had out and out cowards in the ranks of the



profession. The fear of death, even as it is passing with those at the front, should be also unknown to us.

Standing between love and duty, these problems have to be faced by every physician. If there are no slackers or cowards in the ranks why should it be necessary to even suggest a selective draft? The term is distasteful, the idea is repugnant. We agree with the sentiments expressed in the closing paragraph of Dr. Ingall's paper in this issue that "It would be an everlasting disgrace should it be necessary for the War Department to resort to draft to secure a sufficient number to fill the quota of medical officers, SO, DO YOUR DUTY."

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You are requested to look over the advertising in this journal. Nothing is accepted but of the very highest character. It is our duty to help those who help us, and it is easy when we are the gainers.

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Southwestern Medicine should fill a peculiar corner in the medical world. If it does not, it does not deserve to exist. It should be something different. It should reflect the thought and peculiar medical conditions of northern Mexico; of practice out where the west begins; it should spread the knowledge of the climate that heals like medicine, only better. We do not desire to imitate anybody. We want Southwestern Medicine to reflect things as they are in this peculiar field. A few abstracts appear in our pages. We who receive this journal take an interest in it. If you know something of live and general interest, condense it into the fewest possible words and send it to the editor.

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The pneumonia season is at hand again. We have no specific for it as yet. The new serum is quite effective in cases infected with type I. of the pneumococcus but results with it in the army camps last winter were not brilliant, and at least one death was ascribed to it. Anaphylactic symptoms were sometimes severe and caused more suffering than the disease. A good observer who watched its use was not very favorably impressed. The dose is large and given intravenously; there will naturally be some accidents with its administration. It is still in the experimental stage and the general practitioner will do well to wait until it has been tried out by those having exceptional facilities. The best results will come from rational expectant treatment. Rest, air and water are the trinity of salvation in pneumonia. The patient should be put to bed, and kept at perfect rest from the very first hour that the disease is even suspected. Cold water is a diuretic; not so warm water. Cold air acts as a tonic and raises the blood pressure about ten points. Dr. Howard M. Furrell says that his mortality has been very low since using the open air treatment and he has used very little medicine. Attempts to abort the disease by quinine, digitalis, etc.,

are useless and will get you into trouble sooner or later. Give your pneumonia patients a change and watch your mortality rate go down.

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### NEW MEXICO MEDICAL SOCIETY NOTES.

The thirty-sixth annual meeting of the New Mexico Medical Society was held in Las Cruces, October 4th, 5th and 6th. The attendance was small, but the various sections of the State were fairly well represented.

The most important business transacted by the House of Delegates was the rearrangement of the various councillor districts, six districts being made by amendment to the Constitution where but three existed previously. District No. 1 comprises the counties of Chavez, Eddy, Lea, De Baca and Roosevelt, with Dr. R. L. Bradley of Roswell as Councillor. District No. 2 comprises the counties of Torrance, Guadalupe, Quay and Curry, with Dr. H. A. Miller of Clovis as Councillor. District No. 3 is composed of the counties of San Miguel, Mora, Colfax and Union, with Dr. W. E. Kaser of East Las Vegas as Councillor. District No. 4 is composed of the counties of San Juan, Rio Arriba, Taos, Sandoval and Santa Fe, with Doctor C. A. Churchill of Madrid as Councillor. District No. 5 comprises the counties of Bernalillo, McKinley, Valencia and Socorro, with Doctor G. S. McLandress of Albuquerque as Councillor; and District No. 6 has Doctor T. C. Sexton of Las Cruces as Councillor, with the counties of Grant, Sierra, Luna, Dona Ana, Otero and Lincoln. Doctor H. A. Miller of Clovis is Chairman of the Council.

A most interesting and instructive lecture was given by Doctor J. G. Sheldon of Kansas City. His subject was "Some of the Factors that Influence the Mortality in Gall-Bladder Surgery."

A feature of the meeting was the demonstration by the U. S. Field Sanitary Corps No. 1, under the command of Major H. A. Ingalls of the M. R. C.. Doctor Ingalls and three of his lieutenants in this command are members of the New Mexico Medical Society.

Albuquerque was chosen as the next meeting place and the secretary was instructed to take a referendum vote by mail of the membership of the Society with a view to determining the wishes of the Society relative to the making of Albuquerque a permanent meeting place and the establishing of headquarters for the Society with a library and journal.

The following officers were elected: President, Doctor J. W. Kinsinger of Roswell, now in the service with the 24th Infantry and located at Douglas, Arizona; President-Elect, Doctor C. A. Frank of Albuquerque; Vice-Presidents, Doctor H. A. Fall, Roswell; Doctor C. A. Russell, Artesia; Doctor H. M. Cornell, Las Cruces; Secretary, Doctor R. E. McBride, Las Cruces; Treasurer, Doctor F. E. Tull, Albuquerque; Delegate to the A. M. A., Doctor H. A. Miller, Clovis; Alternate, Doctor R. E. McBride, Las Cruces.

## NEWS NOTES.

Dr. G. Werley was on the program with a paper at the New Mexico State meeting.

Dr. S. E. McDaniel of Tularosa was a business visitor in the city on October 1st.

Dr. Johnson of Carrizozo made a professional trip to El Paso on October 7th.

Dr. John W. Cathcart read a paper before the New Mexico State Association in the early part of October.

Dr. B. F. Sturdivant of Centerville, Iowa, has moved to El Paso where he expects to practice his profession.

Dr. J. W. Laws of Lincoln, N. M., has taken charge of the Hendricks Sanitarium during the absence of Dr. Hendricks.

Dr. W. L. Brown was called to Alamogordo on a professional trip.

Dr. T. B. Smith of Clifton, passed through El Paso on his way to Chicago to see the ball game.

Dr. Irving McNiell read a paper before the New Mexico State Association at the annual meeting.

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POST BELLUM PROBLEMS.

The problem of providing occupation and homes for the wounded but still capable soldiers after the war is one which the British Empire Settlement Commission, headed by Sir Rider Haggard, is already seriously studying. Lists are being drawn up of suitable lands in all the Colonies with their possibilities for cultivation and homesteads, but sufficient consideration has not been given to the psychological side. Even supposing many of the soldiers take out wives and children, there will be thousands of single, friendless men who may consent to emigrate, yet hardly realizing what it means, and, becoming disappointed, will gradually drift back again.

Take a citizen, even of a small city; plunge him into the excitement of war, then, afterwards land him among the awful stillness of Canada or Australia to face extremes of solitude, heat or cold, and pass a life time where the rich adventurer only stays while the charms of "roughing it" have not exhausted their power. The success of the experiment will depend on giving him the companionship of women, that is, if one may judge from letters begging for brides to be sent out. Melancholia, shading into madness, is not an infrequent result of the lonely life.



Seeing there will be an alarming superfluity of women, it would be a good plan to persuade bands of them to emigrate, before the war ends, to create the home atmosphere. It should not be difficult. Women in Europe have shown their ability to cope with agricultural and nearly all work formerly done by men. Where there are young widows with youthful sons, these latter could be trained in colonial settlement work. The womanless land for the landless woman, thereafter to be shared with the men who have fought for the land, seems a not impracticable and inharmonious idea.

A perfect but Eveless paradise was not deemed sufficient for man even before the days of original sin; much less, then, will a Governmental paradise-in-the-making prove sufficient for the war-ravaged soldiers.

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### ONE HUNDRED YEARS AGO.

In 1813, as in 1917, that hard taskmaster, War, was holding surgical clinics in Europe, teaching through emergencies that which it might have taken years of experimentation to acquire. Dr. John Stearns, in his annual address to the Medical Society of New York, in 1819, said:

"The late desolating wars of Europe have familiarized surgeons with capital operations and introduced a boldness of practice which has been equalled only by its success. The return of peace has enabled them to lay before the public the result of their experience; in which the French have pre-eminently unexcelled. I cannot refrain from alluding to the important operation of a re-section of the sixth and seventh ribs, and the excision of a diseased portion of the pleura, performed by the Chevalier Richerand. By this bold operation, the heart, while pulsating in all its majesty, was exposed to view, and subjected to the critical examination of the operator. This discovery cannot fail to conduce to important discoveries in physiology."

The reference for this operation is: *Histoire d'une résection des cotes et de la plevre*; lue a l'Académie Royal des Sciences de l'Institut de France par le Baron Anthony Balthasar Richerand. 22 pp. Paris, Caille & Ravier, 1818.)

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### INSTRUCTIVE MISTAKES.

Under this heading, the British Journal of Surgery gives, monthly, some cases from leading men where failure has taught a wise abstinence in the future. It were to be wished that American writers would not confine themselves to relate only their successes, but would have the courage to tell us the ineffectual and hurtful. It is sometimes almost as useful to know the laudentia as the juvantia, and a doctor or surgeon of great experience might make a very useful paper by giving an account of such methods which he has found useless and inconvenient.

## NEW BOOKS.

**The Surgical Clinics of Chicago, June, 1917.**—Teaching by clinics is one of the most useful and practical of educational methods, and the popular bi-monthly publications of W. B. Saunders Company, giving the Surgical Clinics of Chicago by Bevan, Ochsner, Andrews, Beck and others, is especially welcomed by the profession. The clinic by Eisendrath on Gunshot Wounds of the Skull is especially of interest at this time. The views of military surgeons of the present war have undergone a complete change. This is due partly to changed conditions under which the wounds the received. Penetrative wounds are opened regardless of the cerebral symptoms. Tangential and depressed wounds are handled the same by unanimous consent. The various articles on cancer reflect the modern thought as to indications for operative interference; in fact, the best thought in surgical technique soon finds approval and in the Surgical Clinics, and their teaching is considered as the American last word.

—F. P. M.

**The Surgical Clinics of Chicago, August, 1917. W. B. Saunders, Philadelphia and London.**

The great charm of these volumes is that the material in them is exactly fitted for the busy surgeon who, for the time being, has to deal with an emergency and has not time to study the historical side of the operation, or read through many cases which hold a slight similarity with his own. He can see at a glance whether the resemblance is sufficiently strong to warrant his following the operation given. In the August number Dr. Ochsner opens the clinic with his Craniotomy for Jacksonian Epilepsy with the removal of a subdural cyst. Dr. A. D. Bevan gives his technic for Colostomy in a patient with marked stenosis of the entire colon as the result of an inflammatory process unknown to etiology. Dr. Carl Beck operates on a case of pendulous abdomen by removal of excess fat, which parallels a case given by Howard A. Kelly, who excised an immense wedge of abdominal fat measuring 26 inches in length and six in breadth from a corpulent woman. Dr. Beck gives a picture of the portion excised, showing the umbilicus in the center of it. There is a group of six cases dealing with nose, ear, and throat operations from the clinic of Dr. G. E. Shambaugh, cases of common occurrence and so more useful for everyday reference. Benign hypertrophy of the Prostate and its treatment by suprapubic prostatectomy is handled by Dr. Herman L. Kretschmer, who gives us four cases, while from the clinic of Dr. G. Kolischer and J. S. Eisenstaedt comes a new method of anaesthesia in Prostatectomy. The question of the old, not yet explained disease leucorrhoea, is entered into very fully by Dr. A. H. Curtis, who decides the gonococcus to be the source of the original discharge, though this disease should not be diagnosed without microscopic control.

—D. W.

**Nutrition and Clinical Dietetics.** By Herbert S. Carter, M. A., M. D., Associate in Clinical Medicine, Columbia University, etc.; Paul E. Howe, M. A., Ph. D., Assistant Professor of Biological Chemistry, Columbia University, and Howard H. Mason, A. B., M. D., Instructor in Diseases of Children, Columbia University. Lea & Febiger, Philadelphia, 1917. Cloth, 8vo., pp. 646. Price \$5.50.

The reviewer finds this book the most readable one on the subject. The style is good, the material well arranged, and the authors have succeeded in making the book interesting, particularly so, as they have made valuable additions to our total available knowledge of dietetics; the chapter on Digestion, Absorption and Excretion containing the very latest ideas on these topics. The chapter on Diet in Diseases of the Stomach is exhaustive and solves many problems for the general practitioner, who will appreciate especially the modern treatment of gastric ulcer, as it is dealt with in such a thorough way.

—F. D. G.

**The Radium Quarterly.** Dr. Frank S. Simpson, Editor, Chicago, Illinois. \$1.00 per annum.

Deprecators of radium therapy are louder in their denunciation than the modest radium therapists in eulogy. The depreciation largely comes from the Roentgenologists, who have no radium and fear an infringement on their specialty, or from the fearful-of-novelty men who condemn beforehand in case there should be failure. But "failures" do not flourish for over a dozen years, and the modest, laborious search for correct usage of radium by men such as Robert Abbe, Howard Kelly, A. Baessler here, and leading European surgeons who all frankly own up to failures, show one reason for the many journals devoted to radium therapy. The youngest of them, **The Radium Quarterly**, is good in every way, especially in illustrations. It is the "organ" of the Radium Institute, Chicago, and certainly produces pleasant and

elevating airs when played upon by men who have "arrived" almost at the heart of the mysteries with which the nature of this awful mineral are surrounded. —D. W.

**Sanitation for Medical Officers.** War Manual No. 1. E. B. Vedder, M. D., Lieut.-Col. Medical Corps, U. S. A., 1917. Lea & Febiger, Philadelphia and New York. Price \$1.50.

The author frankly says that he has gathered largely from the best writers, but, in the Book of the Maccabees it is stated that he who condenses a too lengthy volume so making it more readable, is a public benefactor and not a pilferer from other men's brains. Dr. Vedder's little manual contains clear directions how to keep the men healthy from the day they encamp; while on the march; in the trenches and on the battlefield, with two chapters, one on Insects Concerned in the Transmission of Disease and another of Notes on Transmissible Diseases, which are so interesting that military etomologists may possibly be created through their study. There is another good thing about the Manual: It is interleaved, so admitting of notes from personal experience. A copy, so edited, would be valuable both to the author and publisher. —D. W.

#### EL PASO COUNTY MEDICAL LIBRARY.

Some new books in 1917 editions:

The Diagnostics and Treatment of Tropical Diseases. E. R. Stitt.  
 The Breast, Its Anomalies, Diseases, and Their Treatment. J. B. Deaver.  
 A Manual of Nervous Diseases. L. J. Spear.  
 What Is Psychoanalysis? L. H. Coriat.  
 Autoplastic Bone Surgery. Davidson & Smith.  
 Handbook for the Sanitary Troops. C. F. Mason.  
 The Nation's Health. Sir Malcolm Morris.  
 The Newest Treatment. Musser & Kelly.  
 X-Ray Diagnosis of the Alimentary Tract. Carman & Miller.  
 Food for the Sick. Strouse & Perry.  
 Preventive Medicine (with Military Supplement). E. Rosenau.  
 Poliomyelitis. Ruhrah & Mayer.  
 Nutrition and Clinical Dietetics. Carpenter & Howe.  
 Manual of Physical Diagnosis. Flint.

**WANTED.**—A complete file of the NEW MEXICO MEDICAL JOURNAL and of the ARIZONA MEDICAL JOURNAL for the Library. No. 6, Vol. VII, 1915, of the Bulletin of the El Paso Medical Society, as that volume is still unbound, because of lacking No. 6.

**PROGRESSIVE MEDICINE** lacks: 1915, December; 1916, June, September, December; 1917, June, September, if anyone has these to give.

**To Doctors Intending to Go to Europe:** Two French Medical Journals come regularly to the Library of the El Paso Medical Society (Roberts-Banner Building). These are "Le Bullétin Médical de Quebec," and L'Union Médicale du Canada." The Librarian, who lived five years in Reims, will be happy to give any help gratis in speaking or reading French with doctors who possess no facility in that language.



**STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., SOUTHWESTERN MEDICINE, REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.**

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Name of—	Post office address—
Publisher, E. W. d'Allemand .....	609 First National Bank Building, El Paso, Texas.
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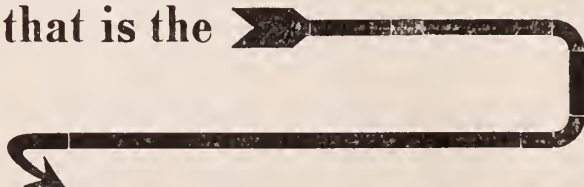
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# Southwestern Medicine

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Volume I

El Paso, Texas, November, 1917

No. 11

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## THE GOOD OF THE ORDER.

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BY

CLIFFORD S. LOSEY, M. D., E. Las Vegas, N. M.

President's Address, Read at the Thirty-sixth Annual Meeting of the New Mexico Medical Society,  
Las Cruces, New Mexico.

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We are passing through a period of our country's history when the medical men have been called upon to make great sacrifices. New Mexico has given her full quota up to the present date, but many more will be needed before this terrible war is ended, and, what I believe to be the initial lesion, the sinking of the *Lusitania*, will be avenged.

As a member of the State Council of Medical Preparedness, it has been my pleasant duty to answer governmental inquiries regarding applicants for Red Cross service and as medical men in other branches, and while trying to be particularly careful that every applicant was fully qualified, I have been able to give a good endorsement in a very large percentage of application. The average doctor in the great Southwest, not having the many niceties for laboratory work and the conveniences of some of the large hospitals, in the way of assistants and nurses, frequently has to rely upon his own initiative in emergencies and it is this same initiative which is to be of value in this war. Many conditions will present themselves to the medical man that will not permit of ample time for laboratory reports and the preparation of the patient for operation; and, in this instance again, I believe the doctor that has had to do without all conveniences is going to be of wonderful service. Then again, how many of you, by lack of proper state of health regulations and money to enforce the same, have been compelled to resort to unpleasant methods of quarantine and control of certain forms of disease and have had to bear the brunt of unpleasant criticism. These same emergencies may present themselves again. The standard of medical men in the Southwest is fully equal to that of any other section of the country, and when the final accounting has come, their records on the scroll of honor will not be found wanting.

There are many doctors of our country physically unable to withstand the rigorous duties of war service but, if they live in a community from where one of their fraternity is absent on service they can be of value to



that man. Speak the kindly word, it always sounds good. And when the absentee returns to his private duties again, whether in the past he has been friendly or otherwise, extend to him the hand of welcome; he will have done a duty willingly, and, in a large percentage of cases, at great sacrifice.

At this time I would like to speak on a subject to which I have given considerable thought and yet remains unsolved. I fully realize there is the occasional case that comes to most of us, which is baffling, not only as to diagnosis, but as to treatment or operation, and in these same cases the great percentage of men are willing and anxious to seek consultation. On the other hand, the great majority of cases which leave this section of the country and go to one or several of the large medical centers for advice or operation, could be taken care of equally well in their own immediate neighborhood. Why is it that this condition obtains? I fully realize it is frequently the desire of the patient, but that the patient's doctor is often responsible for his going some distance and at considerable expense, and this same patient goes and pays the specialist and leaves the doctor at home to hold the bag. I don't mean to be egotistical when I speak of services rendered by members of this society, but I believe them to be the equal of any. The question resolves itself into the fact that we must pay some attention to our own commercial success and not let little local jealousies interfere. This subject will bear the expenditure of a little gray matter.

During the past Legislature no little effort was given by this society's Committee on Public Health Legislation to get a good public health bill with a full-time, paid state health officer passed. The bill was placed with a committee of legislators and there it quietly sleeps. On inquiry as to why this bill was allowed to remain with the committee, the reply was, "The public is not interested in such legislation." Whose fault is it that they are not? I hardly believe it is the doctors. As an illustration to bear out my opinion, I quote from one of our leading state daily papers the following malicious editorial.

*"Forget It.*

"Senator A. V. Lucero, of Colfax County, introduced in the senate bill No. 220, 'to provide for the health, inspection and instruction in the public schools.' Among the provisions of the bill was one making it compulsory that physicians should 'examine all pupils' twice each year and that the parents or guardians of children found defective should be notified, and in case of refusal of parents or guardians to have such children treated as recommended, the same was to be reported to the city or county health officer for action; and in case it was found that the parents or guardians were too poor to pay the expenses of such treatment, the city or county physician was to be notified to so treat the children.

"The bill failed. Somebody in New Mexico is trying to force medical

rule on the state and to take the children of the country out of the care of the parents and place them under the direct care of the state.

"Once for all, let us get over this sort of thing. The parents under our form of government have the care of their children, and if there is one fault on the part of the parents more pronounced than another, it is watching over the health of their children too closely and giving them or having some one else give them too much medicine.

"If physicians were able to speak with authority on children's diseases, there might be some excuse for such law, but after all these years of medicine, doctors know remedies or preventions for very few diseases, and aside from vaccination for small-pox, the administration of antitoxin for diphtheria and the treatment for typhoid fever, probably do about as much harm as they do good, when called upon to look after the health of children.

"And most of the harm comes from suggestion, as does most of the good. For the school nurse to call up the children and ask them if they have any headache, any sore throat, any pain in their little tummies, is merely to suggest any or all of these to the children questioned."

It is true that the publishers of the above editorial have a perfect right to their own unsophisticated ideas, but is it right for the medical profession to allow such articles to appear unchallenged in the newspapers?

I cannot help having a firm conviction that if every doctor would try and impress upon his patients the importance of good health laws, the time would not be far distant when the public would be interested in such legislation and the medical profession would not be subject to ridicule by every cult and fad.

It hardly seems reasonable for a whole room full of children to be kept back in their school work, simply because one or more in the room are deficient or backward; and such is the case in many instances and absolutely on account of some remedial condition. The public is paying taxes for school purposes and the more backward children the teacher has to deal with, the greater will be the expense.

There is much to be said on this school question; but as it is a hobby of mine, I will not inflict any more upon you, but close with the immortal words of Shakespeare:

*"This above all,—to thine own self be true;  
And it must follow, as the night the day,  
Thou canst not then be false to any man."*

## COMEBACKS.

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BYG. H. FITZGERALD, M. D., Bisbee, Arizona.

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Industrial organizations all over the country are rapidly adopting some form of medical supervision of their employees. The movement has spread largely through its own merits, yet it has been hastened somewhat by the passage of workman's Compensation Acts. The older organizations, such as railroads, found this supervision a valuable measure long before compensation laws were common. The Arizona law has compelled corporations employing much labor to protect themselves by requiring a thorough physical examination of all employees. Though primarily a defensive measure, in avoiding damage suits in personal injury cases, these examinations prove valuable in the way of increased efficiency. A well selected group of men, physically qualified for their proposed tasks, is certainly superior to the same number hired in the old haphazard way. The man who does the employing is responsible for the intelligence and manual ability of the applicant, while the medical examiner must answer for his physical condition. This latter is not always an easy task, and mistakes are made which prove costly, both to the company and to the medical department. The difficulties encountered in these examinations, the blunders made, and a few suggestions gained from personal experience form the basis of a discussion of this phase of our work.

There is constant danger of passing a man with some defect which he may later attribute to his work and on which he may attempt to mulct the company for damages. He may do this innocently or maliciously, but in either event he proves an expensive employee. Every unfit applicant who gets by the examination is a potential law suit, and a dead expense to the company who finds it profitable to retain old workers and avoid the annoyance and expense of hiring and breaking in new ones. The man who is not of standard physique cannot stand the severe strain of mine work, and must be replaced by another. Accurate statistics were not obtainable from the C. & A. or Shattuck offices, but estimates by reliable officials place the total cost of hiring and training a new miner at from \$30.00 to \$45.00 per man, figures which emphasize the importance of care in selection. The company is justified in demanding examinations solely on the grounds of economy and increased efficiency, yet they have much to commend them in their relation to the employee, who is prevented from undertaking work for which he is not physically adapted, and which would do him permanent injury. Through being rejected, many an applicant first learns of an



incipient disease which he never suspected, and is thereby warned in time to conserve his health and prolong his life and earning capacity.

These examinations are difficult because the applicant is on the defensive; he comes because he has to, and is prejudiced against the system. He is ready to deceive and to distort personal history to such an extent that it is worthless. As a rule judgment as to his fitness must be based solely on physical findings. I have known an applicant with a glass eye to declare that vision in both eyes was perfect; and a man with frank secondaries to contend that his eruption was due to heat or sulfides.

I will note a few errors which have come under my observation during the past two years:

A fair contingent of mine employees come from Texas, Arkansas, Old Mexico and other Southern points, pass the examinations and yet are badly infected with malaria. A man will work a week or ten days and is back on our hands with chills and fever. Meantime a wife and family are discovered, all more or less infected and in need of attention. The man is subject to recurring attacks and proves an expense for a year or more. As a workman he cannot deliver the goods. Unless there is a decided anemia or an enlarged liver or spleen to arouse suspicion, he gets by the examination and we only learn his true history when called to treat him.

A history of rheumatism is rarely given, in fact, is usually denied. Applicants appear only when free from obvious signs, and unless we encounter some heart lesions and start a rigid inquiry, the disease is generally overlooked. Rheumatic attacks make heavy demands on the medical department and incapacitate the employee for long periods.

Pulmonary tuberculosis among new applicants has been comparatively rare. This is probably due to the fact that mining is not only a hazardous but strenuous occupation. The cases found are usually among old employees who have been examined on account of changing jobs, and who have developed the disease while in the company's employ.

Many sufferers from asthma come to the Southwest seeking relief. Between attacks they are apparently healthy men and may then be passed by the examiner. Naturally, mining soon brings on a relapse and the true history is elicited. In time the man realizes that he is not physically able to stand the bad air and stress of underground work, but he has meanwhile been a burden and an expense.

Nephritis is perhaps the most frequent cause of rejection. Occasionally a nephritic passes the examination when his urine is free from albumen, but the hard work of mining soon causes a breakdown. Some men have been suspects from the start, some have shown albumen by both heat and nitric acid tests, but have cleared up and remained so for a week or more, when out of compassion the examiner has passed him. The result is not a comfortable one for the doctor, and a worse one for the employee, who has probably ruined his chances of a longer life. The pres-

ence of albumen, even though temporary, should bar the applicant. The disease is too serious for taking chances.

Among troublesome disabilities, eye lesions have not been the least. Personal injury claims are constantly being made for defects present when the employee was examined. The examiner who overlooks a cataract, corneal opacity, pterygium or defective vision in one eye, may be sorry later, but that does not help much when the employee starts suit. Only by using the test chart and by careful inspection can errors be avoided. Given one normal eye, vision in the other should be at least half. Even with normal vision the blinking Bohunk should have his lids carefully searched for evidence of trachoma, as he may later attribute the disease to irritation from foreign bodies.

Varicose veins found at the time of examination may never have troubled the applicant, he is even surprised to learn that he has them, yet a few weeks later they may give rise to all sorts of aches and pains. Many seasoned miners have varicose veins which give no trouble, but any varicosities in the unseasoned applicant should disqualify him. Careful inspection of the shins and ankles for old healed ulcers or thin scar tissue will save future dressings and loss of time.

Any type of hernia bars the applicant, and yet so-called traumatic hernias have been far too frequent. So far as I have seen them, these ruptures have been mostly direct, that is, they do not follow the canal throughout. Some have occurred in cases having large rings, but no real protrusion at the time of examination; and others in cases in which the rings were normal, but the abdominal wall thin and weak. The latter I believe to be the most dangerous and any case giving a bulging over the inner ring, or a decided impulse to the finger on coughing, should be rejected, whether or not anything can be felt in the canal. Extremely large rings should be rejected even in the absence of a hernia. Operative wounds in the belly wall should be carefully examined for possible weaknesses, and this is especially true of herniotomy scars, which may give way slowly under the constant strain of heavy work, and form the basis for a claim for damages, or, at least, the expense of an operation.

Latent gonorrhoea or a sub-acute case is often not noted only to appear later with a bubo or an epididymitis, which is attributed to a strain in lifting. Active syphilis is usually readily detected, but the latent variety is easily overlooked and may entail countless complications and endless care.

I think we have paid too little attention to the mouth and throat. A bad pyorrhoea brings indigestion and various infections in its wake; while decayed teeth often result in alveolar abscesses. Enlarged honey-comb tonsils are the cause of many lay-offs during the winter, and much work and expense to the medical department.

One mistake has been in not allowing a general inspection of the naked applicant to weigh more in judging his fitness. Tremors of tongue and

fingers may denote alcoholism, anemia may indicate malaria or syphilis, flabby musculature or emaciation some constitutional disease, and yet if no definite lesion is found, he is likely to get by.

Another comeback has been the matter of substitution—one man taking the examination for another. Failure of the examiner to note some peculiar distinguishing mark on the person of the applicant may prevent a valuable check on these impostors. Careful search will find a brand on every applicant. This is necessary as a means of identification when a question of substitution arises, as otherwise the medical department may be saddled with a chronic for whom they are in no way responsible.

These examinations are not popular, and are severely criticized by labor organizations. We do our best to be just, both to the company and to the men, and yet are accused of favoritism, even of being the instruments of a black-list. Color is lent to this view at times by men being passed who are crippled or really unfit, yet who are old employees, injured in service, whom the company wish to help. Additional color is lent to this view when a man is rejected by one company and later accepted by another. I believe that a common standard of physical fitness, to which we could all subscribe, would be a good thing and would obviate much of the present criticism. With wages high and an abundant supply of hardy men to choose from, I see no reason why any questionable risk should be assumed. It is a mistake to do so, for it results in grief for us, expense to the company and injury to the employee.

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## PELLAGRA.

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BY

WM. HOWE, M. D., E. Las Vegas, N. M.

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Pellagra is a disease of unknown cause, occurring usually in the temperate and sub-tropical sections, characterized by symmetrical skin lesions, largely confined to the uncovered portions of the body, hands and forearms most frequently; by gastro-intestinal disturbances, and by changes in the nervous system which lead to melancholia, dementia, or other evidences of mental despondency, with, frequently, a suicidal intent; and has definite seasonal variations, most frequently appearing in spring and early summer.

The first known appearance of pellagra was in Spain in 1735.

In 1755 Stromboi recorded its appearance in Italy, when it ravaged the section of Lombardy, and from that time until now that country has been considered the natural home of the disease.

It is highly probable that pellagra had existed for many years before being classified, being confused with syphilis, leprosy, scurvy and many other chronic skin diseases.



Some years later France became a victim, but in recent years Roumania has been one of the chief scenes of its activity, also Egypt, Tyrol, Servia, Bulgaria, Greece and Asia Minor have reported cases, with a few from Great Britain.

And there is little doubt but that it has existed in the United States for many years, as it has been recently found among the case records of a South Carolina hospital for the insane, an account of a definite case occurring in 1834.

But it was not until 1907 that the first account of a definite outbreak was reported, which took place in Alabama.

Since that time it has been reported from nearly every state in the Union, but is more prevalent in the South Atlantic States.

It is claimed that over 75,000 cases have occurred in this country, with a mortality of about 40 per cent, which we believe to be a low estimate, as pellagra is a disease of rural sections and occurs chiefly in states outside of the registration area; and therefore it is very difficult to secure definite data at this time.

Dr. Joseph Goldberger, of the United States Health Service, who has made some very careful experiments, holds that it is found that nearly all cases of pellagra are found to be in persons who are not able to get the best nourishing food, and that very few cases occur among the well-to-do.

He observed that in certain orphanages in Mississippi, including two hundred cases, that after an additional diet was prescribed, without any change in hygienic or sanitary environment, only one case re-occurred the following spring.

The conclusions drawn from the experiments of Dr. Goldberg are as follows:

1. Diet is the common factor in the various methods of treatment recently advocated. The marked success claimed for each of these methods must logically be attributed to the factor (diet) which they have in common.

2. The value of diet in the prevention of pellagra has been tested at two orphanages and at an asylum for the insane, endemic foci of the disease. Marked increase in the fresh animal and leguminous protein elements of the institution diets were made.

Of 209 cases of pellagra observed at the orphanages during the spring and summer of 1914, not less than 172 completed at least the anniversary date of their attack under observation. In only one of these 172 pellagrins, following the change in diet, was there recognized evidence of recurrence, although on the basis of experience elsewhere, from 99 to 130 might reasonably have been expected. Nor was there any case observed among the non-pellagrin residents, 168 of whom completed not less than one year under observation.

Of the group of pellagrins on the modified diet at the insane asylum, 72 remained continuously under observation up to Oct. 1, 1915, or at least until after the anniversary date of their attack of 1914. Not one of this group has presented recognizable evidence of a recurrence, although, of a group of 32 controls, 15 have had recurrences.

Pellagra may, therefore, be prevented by an appropriate diet without any alteration in the environment, hygienic or sanitary, including the water supply.

3. At an isolated convict camp, previously free from pellagra, with an average population of from 70 to 80 white males, 11 volunteers were segregated, and, after a preliminary observation period of two and one-half months, placed on an abundant but one-sided, chiefly carbohydrate (wheat, corn, rice) diet, from which fresh animal proteins and legumes were excluded. At least six of these volunteers developed pellagra.

This result would appear to have been brought about by the diet on which they subsisted.

4. A definite conclusion as to the intimate mechanism involved in bringing about or in preventing the disease by diet cannot be drawn from the available data.

For the practical purpose of preventive medicine, it would seem to be of fundamental importance to recognize that the pellagra-producing fault whatever its intimate nature or however brought about, is capable of correcting or preventing by including in the diet suitable proportions of the fresh animal and leguminous protein foods.

Chas. T. Nesbitt, Health Officer of Wilmington, N. C., draws the following conclusions from health statistics for five years, embracing 1911 to 1915, inclusive:

The total mortality per 100,000 population was as follows:

<i>Year</i>	<i>Total</i>	<i>Entero Colitis</i>	<i>Typhoid Fever</i>	<i>Communicable Diseases</i>	<i>Pellagra</i>
1911	1123	411	100	54	38.8
1912	655	320	35	53	21.3
1913	651	206	50	41	16.6
1914	644	220	25	39	38.2
1915	474	80	9	30	64.6

This shows a wonderful decrease in general during the five years, through the improved water supply, excreta disposal, and better sanitary conditions, quarantine control, etc., except in pellagra, which nearly doubled.

Thus he draws conclusions from his local experience that there is no existing relation between soil pollution and the incidence of pellagra.

Close supervision of all cases, disinfection, fumigation, isolation and the means of controlling infection have no influence on the incidence of pellagra.

But, business depression, lack of employment, a limited market for produce, increased price of food with consequent increase of indigence, increases the incidence of pellagra very markedly.

Dr. L. W. Allison of Fort Worth, Texas, states that since 1907 until now, each of the southern states have had tens of thousands of cases and that the states have no such poor as can be found in Italy, and that the disease is frequently found among the well-to-do.

Dr. Bowman of Fort Worth, Texas, claims that 80 per cent of their cases come from the homes of ranchmen who live on milk, eggs, beef, pork and vegetables with very little corn meal.

It has been demonstrated in South Carolina on two occasions during 1914 and 1915 that proper sewerage greatly reduces the number of pellagrins, as four large mills, two having water carriage systems installed and the other two retaining their open surface privies. The two mills that installed sewerage systems greatly reduced the recurrence of pellagra, while with the other two no such change for the better occurred, as they had a large number of recurrences.

In Nashville, Tennessee, a thorough investigation was made by the Health Department, including 65,000 persons, gathering data from more than five hundred cases of pellagra, in regard to age, sex, race, season of the year, social status, economics, diet, occupation, milk and water supply, sewage disposal, previous exposure and parasitic infection.

In regard to sex, women under 50 years of age were affected from three to four times as often as men; above that age, the sexes were about equal.

Regarding season of the year, cases among whites were more often in the spring; among negroes more frequent in summer.

It was found that out of the 500 caess, 421 were consuming sufficient protein diet and that men with probably greater protein requirements, still showed very much less susceptibility to the disease. It was also found that the disease was found in the unsewered area, and that the sanitary conditions in that part of the city were of the worst.

In an area of a square mile in which pellagra was most prevalent were found fifteen hundred privies which were rarely cleaned nor closed against the invasion of flies, were located seldom more than fifty feet and frequently not more than fifteen or twenty feet from the kitchen, with not more than two per cent of the kitchens screened.

It was also found that 78 per cent of the patients had been in intimate contact with the pellagrins before contracting the disease.



It was shown later that the installation of sewers and better sanitation in certain districts was followed by a decrease in the number of cases originating therein.

A summing up of the conditions, as was found in the literature, and our own conditions and observation, indicate that factors other than deficiencies in protein diet are concerned.

In referring to improper or unbalanced diet, why should we not find the disease most frequent among vegetarians, where proteids are a minor part of the food constituency?

Nevertheless, we are unable to find such to be the report in any of the discussions or literature.

It has been worked out in several of the large Southern institutions that a well-balanced diet or one forcing a strong protein diet has cured and prevented many cases returning.

But what better ground have we for believing pellagra to be caused by poorly balanced nutrition than we have to think that "T. B.," or any other disease accompanied by emaciation, when the same forced feeding with good nutrition will overcome and eradicate almost any of those conditions in many cases?

However, it is very clear that a poorly balanced diet may be a secondary causative factor and produce a greater susceptibility to pellagra and almost any other disease, by undermining the general vitality.

But from our observation in this locality we are led to believe that it is other than a lack of protein in the diet, as all of our cases have been among the native population, who as a rule live on a strong protein diet consisting of beans, milk and eggs and "carne." They nearly all have ranches and raise their own meat, eggs and milk, together with a good garden.

But the sanitary conditions are very much similar to those found in Nashville, with all manner of feeding places for flies, and very little or no protection against them; and, so far as we can find in the literature of the present time, corn as a dietary causative factor has lost much favor; and the theory that it is due to an excess of silica and alumina in the water has met little favor and does not seem to be supported by facts.

We do not believe it to be directly contagious, as with few exceptions doctors and nurses in large institutions, handling and caring for many patients, seldom contract the disease; neither does it seem to be hereditary, but a low diet and lowered vitality seem to be predisposing factors, the same as in many other conditions.

Therefore, we cannot help being led to believe it to be an infectious disease, instead of being caused by a lack of protein in the diet, on account of the seasonal appearance, which is the most favorable time for the flushing and distribution of filth by spring freshets and floods, followed by the

advent of the fly; and that it immediately follows the cold season when people in general have been consuming more protein for months preceding its occurrence than any other time of the year.

However, it may be of interest to report the cases we have seen:

Case 1.—M. Baca, age 67, gave a history of having a similar condition in the spring of 1911, and was treated by Dr. Shaw; recovered and had no recurrence until spring of 1915; treated by Dr. DesMarais and again relieved. This spring on May 13th came to me and some of the gentlemen present saw him with me May 30th, but he gradually grew worse and died some time in September.

Case 2.—May 13th, the same day that I saw the first case, was called to see a Mr. Martinez, who was very much emaciated, and confined to bed, had the very characteristic skin eruption on the hands, absolutely no appetite; sore mouth resembling salivation; he made no improvement and on about May 23rd developed the characteristic throat paralysis and died about June 1st.

Case 3.—Mrs. Castellano came to me last February with a large goitre, which improved very rapidly; she made weekly visits to the office during February, March and April. About the first of April she complained of some indigestion and developed a peculiar looking sunburn eruption on the hands and forearms, later on in the month, but I thought very little about it, as I supposed she had been out in the garden at work in the sun and burned them. After about the first of May I did not see her for a while, until about June 21st, when I was called and found her with the same skin eruption, no appetite, sore mouth and tongue, intermittent diarrhoea, urine loaded with indican, and some albumen. About July 1st she began bloating, urine showing more albumen. There was no stimulating an appetite. The œdema increased, urine loaded with albumen and bile; the last part of July patient became very jaundiced, followed by marked echymosis of arms and chest, which cleared up, but œdema, albumen, gastric and mouth symptoms increased; the patient died August 11th, of uremia.

Case 4.—June 5th found Mrs. Gonzales, age 45, in a pitiable condition, very weak, emaciated, no appetite, almost constant diarrhoea, sore mouth and tongue, characteristic eruption on hands, with one of them sloughing, throat paralysis developing, condition hopeless; the patient died about June 20th.

Case 5.—Mr. Baca, age 54, was first seen on July 7th; found very weak, sore mouth and tongue, scaliness of hands, no appetite and a history of having had intermittent diarrhoea for two years, which had recently become hemorrhagic and very persistent. He rapidly lost strength and in about two weeks developed the throat paralysis, and died July 30th.

All five cases had a clear mind, but during the last three years there

have been seventeen cases admitted to the State Hospital for the Insane with a mortality similar to mine.

In regard to treatment.—Perfect rest, good nutrition, care and hygienic surroundings, but so far as drugs are concerned, Tyson says the only group worthy of mention are the Arylarsonates, of which Atoxyl is probably the best, but owing to its toxicity, and the fact that it is not dispensed in tablet form, he has preferred Soamin which is less toxic and can be had in one grain or five grain tablets, which is given in doses from five to seven grains by hypodermic injections deep into the gluteal muscles; and that it seems useless to give medicine to control the diarrhoea.

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## TREATMENT OF ACUTE BRONCHO-PNEUMONIA IN CHILDREN.

BY

C. A. REINEMUND, M. D., El Paso, Texas.

(Read Before the El Paso County Medical Society, September 17, 1917.)

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Before discussing the treatment of acute broncho-pneumonia in children, I wish briefly to call your attention to certain factors to be kept in mind, when undertaking any method of treatment for this disease.

In the first place, broncho-pneumonia is practically a disease of early childhood, most common during the first and second year and very rare after the fifth, which fact in itself brings to our minds many difficulties that must be overcome in order to carry out any successful line of treatment.

Secondly, acute broncho-pneumonia in children is a secondary disease, following, as it does, any of the mild catarrhal inflammations of the upper air passages, but more often the specific infectious diseases of childhood, especially measles, whooping cough and diphtheria, naturally when pneumonia sets in, the child is already in a more or less debilitated condition, increasing the difficulties in treating.

Thirdly, the course of the disease is not a distinct one, *i. e.* there is no average length of time in which the disease will run its course, no distinct crisis. These facts simply mean that we must carry out our treatment successfully, or our disease will progress to a fatal termination.

Fourthly. Broncho-pneumonia is not caused by any specific organism. Examinations usually show mixed infections with one or the other organism predominating in the different cases. This fact makes vaccine therapy very difficult, as only autogentous vaccine therapy would be logical, which is practically impossible in a small child.

These different factors clearly show that the mortality rate in this disease must be high at its best, and I certainly found this to be the fact here in El Paso, among our Mexican children especially, where home surroundings, lack of care and superstition put big difficulties in our way.



I will outline briefly the treatment I have been using, and ask you to help with criticisms or suggestions; then this paper will have helped to lower the mortality rate in this disease.

**Prophylaxis:**—Here I call special attention to the fact of impressing upon the laity that they must take better care of their children during the mild infections, the common so-called colds, which we have here so frequently; also to be more careful with measles and whooping cough, in which usually very little care is taken to prevent spreading infection to the lungs. We physicians, in treating acute infectious cases must examine the lungs of these children with most care to prevent a broncho-pneumonia from setting in. Remember, also, the acute gastro-enteric infections, in which we so often overlook the chest until it is too late. Again, I believe it is far safer to isolate all cases, as we would any other contagious disease.

In the hygienic treatment of pneumonia, give more attention to the ventilation and temperature of the sick room. There must be plenty of fresh air, but no direct draughts on the child and the temperature must be kept as near 70° F. as possible and this being done by thermometer and not by guesswork. As to the dress of the child, it should be a loose fitting gown, including feet, of outing flannel during the warmer months, or a so-called "Denton" garment during the cold months, at the same time avoiding all jackets or heavy poultices, which all have a tendency to make the child uncomfortable. Our whole aim should be, to make the child as comfortable as possible, in order to preserve his strength. Systematize as much as possible the routine of treatment, so that taking temperature, local treatment, feeding and medication shall follow each other as closely as possible. Thus we can give the child two and one-half to three hours' uninterrupted rest, which, to my mind, is often of more use than too much treatment.

**Diet:**—In breast-fed infants I give one or two ounces of water before each nursing and cut down the time of each nursing; in bottle-fed infants and older children during the time of high fever, I discontinue all cow's milk, giving gruels, malted milk, strained broths or albumen water with orange juice; by so doing, I find the children suffer less from tympanitis.

**Bowels:**—Every second day I give a dose of castor oil, unless there is a very weakened condition, where I use the normal salt enemas, also when there is much tympanitis, but this condition is rare in my cases since discontinuing the use of cow's milk during the high temperature.

**Local Treatment:**—Counter-irritation. This is especially indicated in the early stages of the disease and I use mustard in the form of the paste, applying it both to the front and the back of the chest, using one part mustard flour to four to six parts of flour, depending on the age of the child and also the condition of the skin, using the white of the egg instead of water to mix it with. After the skin becomes reddened, I remove it and rub the chest with camphorated oil. In severe cases, I repeat this every

six hours. If the skin is very sensitive, or the condition of the lung is improving, I use it twice daily, also decreasing the strength. In the early stages of the very sthenic cases a mustard pack acts more promptly and is more effective, only it is rather difficult to use in young children on account of the itching. For pyrexia, I have been using the wet pack made by wrapping the body of the child, between the shoulders and the knees, in a large bath towel, wrung out of water at a temperature of 95° F., and reducing the temperature of the pack *in situ*, by pouring on water at 90°, then 85° and so on down to 70°, if necessary, to bring down the temperature of the child, using an ice cap to the head and a hot water bottle to the feet. In this way the fever can be reduced without much danger of shock or disturbing the child, who can, if necessary, be kept in the pack for several hours. It is best to remove him from the pack and thoroughly dry with vigorous rubbing, when the temperature comes down to 102° F. in the rectum. The indication for the application of the pack depends on what effect fever has on the child, but a safe rule is to use it when the fever is over 104° F. in the rectum. In the asthenic cases it is better to use the warm mustard packs.

For cleansing purposes use a warm soap sponge bath and alcohol rub.

**Inhalation Treatment:**—This form of treatment is very serviceable where you have good nursing and it can be carefully carried out, otherwise it may do more harm than good. It is especially indicated when the secretions are very tenacious and there is much annoying cough. Use the crib as a tent and connect the steam kettle to it, using creosote as the medicament in the solution; I have also used compound tincture of benzoin and eucalyptol with good results, but be especially careful not to make the vapor too concentrated and to change the air in the tent frequently.

**Medicinal Treatment:**—As we have no specific for this disease, naturally the internal treatment must be symptomatic. There are several things which make for success. Keep up the general resistance of the patient, rid the lungs of the local infection and support the heart during the terminal stage of the disease.

The general resistance is kept up best by the care of digestion, but no matter how careful we are with the diet, if we upset digestion by nauseating and irritating medicines, then we have lost our main ally in the successful treatment of the disease. For this reason I do not use syrupy expectorants. If counter-irritation is not sufficient then I use expectorants by mouth in powder form, using a formula that Kerley recommends, containing tartar emetic, pulv. ipecac and ammonium chloride in minute doses. This formula is very satisfactory for liquifying the secretions and clearing the lungs, but has the disadvantage of having to be given between feedings and at times producing vomiting. I therefore usually discontinue the use of this formula after 48 hours, if I do not get any results, and reduce the dose if the results are good. Recently I have used

a formula suggested to me by Dr. M. P. Schuster, containing spts. camphor, aromatic spts. of ammonia, spts. nitrous ether with cinnamon water as vehicle, which has been giving me far better results. Camphor, as you all know, is highly recommended in all acute infections of the lungs and is also a good diffusible stimulant. The ammonia is a good stimulant and expectorant, the nitrous ether is a diaphoretic and diuretic. The dose, naturally, is governed by age, but for a one year old child, I use spts. camphor m1; aromatic spts. of ammonia m3; spts. nitrous ether m6; with cinnamon water m20 and water q. s., giving it every three hours, well diluted. If any additional stimulation is necessary by mouth, I give brandy or whiskey. For the cough, if possible, I use the inhalation treatment, otherwise give codeine in powder form in minute doses by mouth. In the later stages, when the heart may need additional stimulation, I prefer giving camphor hypodermically, but since using the above described mixture by mouth, I have not used the latter so frequently.

In the extreme cyanosis of the later stages the oxygen inhalations are very serviceable.

**Vaccine Therapy:**—I have used mixed vaccines in a number of cases but without apparent beneficial results, which I attribute to the fact that, in giving stock vaccines we are simply taking a pot shot at the infection. The more ideal way would be to use an autogenous vaccine, but that is very difficult in a small child.

In summing up treatment, I would say success depends on the possibility of keeping up the child's resistance; ridding the lungs of the infection as quickly as possible, and whatever remedies will do that most consistently are the best ones to use.

#### DISCUSSION ON DR. REINEMUND'S PAPER.

The discussion was opened by Dr. Rawlings, who said that the treatment mentioned was rational and along the lines he used. In the matter of prophylaxis he thought we should make more effort to prevent the onset of this complication, he especially in whooping cough and measles, where we let the family do most of the treatment. We should educate the laity to the fact that measles are serious. He believed he had been able to cut short the course of whooping cough by the use of the vaccines; using them in larger doses than ordinarily employed. He believed more harm than good was done in the use of local treatment. Mustard is the best counter-irritant in the beginning, but, after the third or fourth day, results are poor. Inhalations are good, but must be used with care. He preferred the pack for high temperatures, using in the same way as does the speaker. The most important thing in treating infants is not upset the stomach. Ipecac, squills, ammonium chloride, etc., are not good. He does not take the child from the milk when it is on the bottle, but if the child is digesting the milk, he simply reduces the strength. Stimulating drugs frequently disturb the stomach; when necessary, he uses strophanthus and nitroglycerine, with which he has had the best results.

**Dr. Mueller:**—Said he did not believe in taking the child off the milk nor in hot applications, but uses hydro-therapeutics for reducing the temperature, and likes ammonium chloride, as he thinks it helps. Believed in the fresh air treatment as they do better when outdoors; undue exposure was to be avoided. Had not had definite results with vaccines.

**Dr. Montenyohl:**—The main thing is to preserve the stomach. He got results with strophanthus, and stimulated the patient early in the disease. Some of the best men believed in early stimulation. Ratchford of Cincinnati used inunctions of gualacal in



anhydrous lanolin. Guaiacol appeared in the urine in about two hours after the inunctions; it overcame infection in the lymphatics.

**Dr. Branch:**—My treatment hinges on the treatment of the disease preceding this trouble. I use creasotol, mixed with whiskey and ammonium muriate. The patient should have plenty of water on the inside; I use local applications and frequently give a little infusion of digitalis, using the stimulants early.

**Dr. McKinney:**—Believed the patients did better without any drugs at all.

**Dr. Safford:**—Called attention to the use of physiological salt solution in combatting the ill effects of high temperature, where you have poor nursing and can't get hydrotherapy. He gives it by rectal injection every four or five hours; toxins are diluted and temperature lowered. He prefers the warm pack and cooling procured in this way by evaporation. Some dozen years ago Dr. Schuster came back from New York and spoke of one of the pediatricists using camphor as his sole drug. He makes it his most important drug; gives it with whiskey and syrup of tolu; does not give large doses. Believes he gets definite results from this medication.

**Dr. Strong:**—After whooping cough, measles, scarlet fever, etc., give the lime water and keep the urine neutral. Vinegar inhalations are good, using litmus paper to test with. He calls attention to the fact that the pneumococcus does not grow in an acid medium.

**Dr. Bishop:**—Believed thoroughly in medication. Gets fine results with a good many drugs, such as aconite, belladonna, etc. She used hot packs also.

**Dr. McNeil:**—Called attention to the necessity of rest in these cases, but did not believe that babies should be kept outside. Uses enemas for tympanites and ammonia for its stimulating effects.

**Dr. Waite:**—Remarked that all the doctors used different drugs and none of them can tell what his particular drug did. The homeopaths taught us that people get well without medication. Regarding the reduction of temperature, he stated that to melt ice you have to have 70 calories of heat to every dram of ice. Where you get high temperature in these patients, give them plenty of ice and you will reduce it.

**Dr. Thompson:**—Said that the bronchial tubes of a baby have an exceedingly fine lumen, and in the pathological changes during broncho-pneumonia they are easily stopped up; that is the reason you should not give opiates in any form. Croupous pneumonia does not occur frequently in children. The time for stimulation is when you see the nostrils twitching with each breath. He uses alcohol in some form or other for stimulation. Of the external applications the wet pack is good. Where you cannot get nursing, especially in poor people, he has a vest made and lined with cotton, and keeps this on their chests during their illness. Keeps the lungs covered. He believes it is a difficult matter to cut down the temperature in these cases. The child should be kept quiet; as few people as possible should pass in and out of the room, and regular feeding periods are necessary.

## VITAL STATISTICS.

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BY

CRESSY WILBUR, M. D., U. S. Census Bureau.

(Read at the Fifth Annual Meeting of the Arizona Health Officers.)

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Though I have been engaged in in vital statistical work for 25 years, thirteen in charge of that work in Michigan, eight years as chief statistician of the U. S. Census Bureau for Vital Statistics, and for the past two years director of the division of vital statistics for the State of New York, all my experience has been Eastern experience, so I am very glad to get some first hand information as to actual conditions in the West.

Although vital statistics are everywhere recognized as an absolutely necessary basis of public health work, they have been much neglected in this country. The registration of deaths at the present time for the official registration area of the United States includes only a little over two-thirds of the total population of the country; it includes much less than that,—I think about forty per cent—of the total area, indicating that the registration as you would naturally expect, is poorer in the more sparsely settled states. The registration area was established in 1880; before that time the only information regarding the number of deaths was at the decennial census, beginning in 1850 and every ten years. In 1880, under the direction of Dr. Billings, the registered list of deaths from actual records were obtained from the two registration states that, with a few cities, constituted the registration area for that year; they were Massachusetts and New Jersey. Ten years later, in 1890, a number of states were added. There was general interest in the medical centers of the north and northeast; several states were added, New York and others in the far east. There was little change in 1900, except that the state of Michigan was added for the census year ending 1900, and the state of Indiana for the calendar year. In 1900 there was begun the annual collection of vital statistics of deaths, by the Bureau of the Census. Beginning with 1902, the date of the organization of the permanent Bureau of the Census with a provision for an annual list, there has been sustained effort made to improve the character of legislation so that we might have general registration throughout the Union. For that purpose there has been active co-operation with the state authorities and with the national organizations in which these states are represented, chiefly the American Public Health Association and the Section on Public Health of the American Medical Association. It was thought, early in 1900, that there should be some draft of model laws that would be sufficient to give satisfactory results. At the beginning, certain essential principles of registration were established, among them the re-

quirement that deaths should be registered by means of burial permits. This is absolutely necessary in order to obtain complete records. This essential principle of the burial permit is a fundamental one in our model law which has now been adopted in so many states. It implies that there shall be a local registrar in the district, so that he can exercise supervision and be able to make a report to his superior officer once every month as to whether the deaths are properly registered or not. Those are the essential features of the model law; the requirement of burial permits, the filing of a properly made out certificate of death on a standard form before the permit is granted, the prompt return of that certificate of death to the central office, the granting of a burial permit before interment or removal, the appointment of a sufficient number of local registrars and their adequate compensation. The states have not adopted laws absolutely identical in these provisions but have patterned more or less closely after the model law and I am very glad to see that experience with this law throughout the Union in the most densely and most sparsely settled states has demonstrated that this law is an efficient instrument for the collection of vital statistics. There are, of course, many differences, as we pass from the densely settled east to the middle west, from the northern states to the Pacific coast. In the east, especially the northeast, the problem of registration was made much easier from the fact that the states were more densely settled, the counties are subdivided into townships or towns, furnishing the most satisfactory units for registration purposes. In the western part of the country and especially in the south, it has been difficult to carry out the subdivision of the counties and in many cases it has been difficult to obtain properly qualified local registrars, and to be sure that all births and deaths are registered. In examining conditions in Arizona, I believe that both Dr. Godfrey and the present Superintendent of Public Health have made most earnest efforts to bring about a thorough registration. Arizona uses the standard certificates that are essential. They are properly bound and indexed and control is kept of the manner in which they come in. There is, however, one fundamental difference in the Arizona law and the model law as recommended by the Bureau of the Census, and on this difference I shall be especially interested to hear the opinions of the county health officers. Under the model law, it is considered an essential principle that the returns from the local registrars, that is, those officials in charge of the small units of registration, shall be made direct to the state office.

Under the Arizona law, they are made to the County Health Officer, who keeps them and makes his return, a little later, to the state office. We might call one system the Direct System, the direct control of communication between the local registrar and the state registrar, and the other the Indirect System, by which the returns pass through the County Health Officer's hands to the state registrar. It has been found, by experience, I believe, that the direct system is essential.

I have recently had the pleasure of examining conditions in the State



of Washington. Some few years ago, Dr. Kelly, then Commissioner of the State of Washington, at my suggestion, obtained an amendment to their law, by which returns were made directly from the local registrar to the state office. He told me, then, that the conditions were very different in the West and that the system of returns from the county health officials was working well and was more suitable for conditions there than the system of direct returns. I was very glad to find on my recent visit to Seattle that the State Health Department was entirely convinced of the good results from the change. They obtain a much larger proportion of births and a considerably higher proportion of deaths.

In Oregon they are also changing their law at the present time, instituting a law in which the same modification has been made; from the indirect method of returns to the direct method, and the direct responsibility of the local registrars to the state registrar.

In California, which also had the county system, Dr. Sawyer told me the other day that he would take measures to have the change made, so that in the three states of the Pacific coast, the change from the indirect method through county officials to the method of direct returns, as embraced in the model law approved by the American Public Health Association, the American Medical Association, and the Bureau of the Census, has been put into effect.

I hope it will be possible for you to do the same thing in Arizona, thereby removing the only remaining obstacle for your recognition as a registration state and entrance into the registration area for deaths. It will entail no additional expense, the compensation paid the local registrar is sufficient; the compensation paid to the county health officers for their present services under the registration law ought to be protected and they might well be employed in a supervisory capacity.

In the State of New York, we have about twenty districts and a sanitary supervisor appointed for each district, and though their duty is primarily related to the supervision of health officers, they perform a very valuable work in inspecting vital statistics. Every time they visit a town, besides examining the matters relating to the public health, they inspect the office of the local registrar and make a report, and their services are very useful. Such a change will entail no additional expense and I believe will be a more satisfactory system. Some details may perhaps be suggested; perhaps it will be necessary to retain the county records. It will be very possible, without additional expense, by a slight modification of the present law to put the Arizona statutes in such form that its results would be acceptable to the Bureau of the Census, and I am sure you will find there will be a real increase in efficiency.

#### DISCUSSION.

**Dr. Flinn:**—Those who have lived a few years in Arizona know that the well-seasoned Arizonian is found always in one of two conditions—either with money in every pocket or else dead broke—and he is equally happy in either condition. The

history of the State, County and City Health Officers' Association is somewhat similar; for a number of years, four or five, I believe, we have plugged along in our narrow, provincial way, doing what little we could, but, suddenly, in the year 1916, we are favored, as the President has said, with two United States officials at one meeting. We thought that we were particularly fortunate when we learned that Dr. Pierce was to be with us, but when we find that the man who put the "eyes" in Vital Statistics is in attendance, it seems the very acme of good fortune. The facts I am about to mention are very familiar to Dr. Wilbur, because in 1908 and 1909, when the vital statistics law was passed and put into operation, Dr. Wilbur was still chief statistician. Up to 1908, we had absolutely no vital statistic law in Arizona. In that year I was fortunate enough to be elected secretary of what was then the Territorial Medical Association, and we had a committee appointed to take up the matter of a vital statistics law for Arizona. As secretary of the Association, I was chairman of that committee. At that time, we knew absolutely nothing about vital statistics—we know very little now, but nothing then. We were fortunate enough to find out there was what Dr. Wilbur has referred to as the model law, gotten up by the American Public Health Association and approved by the Bureau of the Census. We took that model law and pored over it for several months and finally made up our minds—again I repeat that we knew absolutely nothing about vital statistics—that it would be much more feasible to change this law to meet, as we thought, local conditions in Arizona.

We changed the law, as Dr. Wilbur has told you, from what he refers to as the direct method to the indirect method of taking vital statistics. To be quite frank with you, gentlemen, I think the one mistake we made, when we changed that law, was in the matter of name. I firmly believe that if we had called the County Health Officer (who is the "County Registrar of Vital Statistics"), the "Local Registrar of Vital Statistics," and had called our present local registrars "Sub-registrars," as is done in the model law, I do not believe we would have heard much from the Bureau of Census about the non-applicability of our law. As a matter of fact, the County Health Officer or County Registrar of Vital Statistics corresponds to the Local Registrar of the model law and our Local Registrars (so-called), correspond to sub-registrars. Dr. Huffman told us this morning something about the difficulties he has in getting local registrars. I doubt if Dr. Wilbur, with all his experience, has a clear conception of just how very, very difficult it is to get suitable local registrars in Arizona. I can speak for Yavapai—that it took me five years to get a corps of competent local registrars—though I think I have them now. In regard to the direct method, I challenge any man to prove that it is possible—as it would need to be, I take it, under the direct method—for the State Superintendent of Health or State Registrar of Vital Statistics, whether he lived in Phoenix, Prescott, Tucson, or wherever he lived, to find suitable local registrars throughout the state of Arizona; I claim it is a physical, mental, moral, spiritual and intellectual impossibility. To my mind that is the strongest argument in favor of our present system. Another argument is this: in spite of everything we can do, the local registrars change with, what would be considered in the east, as great frequency. We are a moving population in Arizona. When our hats are on, our houses are covered; we are here today and away tomorrow, and that is especially true in the mining districts.

It is very difficult under our present law to get these local registrars to obtain the certificates of birth and death for us. In my opinion, it would be practically impossible to get them to make the proper copy and keep it in the proper form. I take it that the Bureau of the Census considers it very important that there shall be a copy of the original birth and death certificate. If that is true, I would say that it would be practically impossible for you to do that without your county registrar. In regard to the suggestion that Dr. Wilbur made that county registrars still be kept in office, I do not believe it could be done. Dr. Wilbur speaks of \$25.00 or \$50.00 a month as being a small compensation. If he had something to do with our Boards of Supervisors, he would realize that \$25.00 a month is a munificent compensation for any amount of work, and the idea that our Boards of Supervisors, who are always the friends of the people, would allow us \$25.00 a month to act as inspectors is absolutely unthinkable.

Personally, my contention in regard to the Arizona law is this: I believe we are getting a large percentage of the certificates of birth and death; I believe we are getting them in fairly promptly; I believe we have in Arizona a good, workable law, and, considering that it has only been in effect six or seven years, we are getting very, very satisfactory results. I believe it would be a mistake to change it, and that the Bureau of the Census is doing us an absolute injustice in keeping us out of the registration area simply because our law does not conform to what they consider a model law. I take that the object of a vital statistics law is to get vital statistics; if we are getting them and getting them satisfactorily, let us stick to our law, notwithstanding the injustice done by the bureau.

**Discussion by Dr. T. J. Bouldin:**—After the two gentlemen who have preceded me, it seems there is not much left for me to say. It struck me that Dr. Flinn was right when he said that it would be almost impossible to get local registrars to send certificates to the state registrar, and inasmuch as the county registrars are only collectors of the certificates, if they were named according to the provisions of the model law, it seems that would cover the difference. Personally I feel that Doctors Flinn, Looney, Godfrey and others should be congratulated on the efforts they have made in the last few years in getting a vital statistics law. In regard to getting local registrars in the various localities, Dr. Looney suggested a few years ago that it would be a good plan to get women for this work. I tried it and think I have had much better success since I got women in the different neighborhoods to report. They rather like that little 25 cents a paper; it comes in handy the first of the year. In my county we have four or five Government physicians and I find that there is no trouble with men in the Government service to get them to report; they are always prompt. It seems to me almost essential that the records of births and deaths be kept in the County Recorder's office, that the people may look up when and how a person died. I think our recorder is asked such questions every few days. It seems that if they were sent only to the state registrar and no copy kept in the county, there would be quite a lot of confusion.

In regard to justices of the peace or notaries being appointed registrars, I spoke to our Board of Supervisors and they said that if they had to pay just the same, they would keep the registrars they had.

**Dr. B. G. Fox:**—I will just take the last remark about the vital statistics physicians being prompt. I am county registrar, and it has been my experience that when reports are due the first of the month, about the fifth I begin to receive reports from local registrars. I am also local registrar in the City of Globe, because the other doctors did not want the job. I think I have to get my report in on the tenth. I meet Dr. A. and say, "How about births this month?"

"I have three or four and will bring them in; I could not get the name of the child and want to wait until I can; then I will bring them in."

"Did you ask about it?"

"No, I have not been back."

"Well, send in the certificate, I want it."

"All right," he says, and sends in a bunch. When I go to make up the report, I find a certificate for February 12th. The next time I see him, I ask about it. "Well, I went away and forgot about it," he says, and there you are. It is the fault of the doctors, if there is a doctor in attendance, that certificates are not sent in. You can talk about the direct or the indirect system; it is all with ourselves. If you want to get reports of births you can do it. There is where the whole trouble is; I think the present method is good, if properly attended to. There are some of the outlying districts where I have some trouble with local registrars. By hunting around I got a pretty good corps until this new law that they had to be notary public or justice of the peace in order to be local registrars. I now have only one district in the county where I have trouble; the others are very prompt. But we ourselves all of us are to blame for this slackness in the registration of births.

*Dr. Cressy Wilbur, closing discussion on his talk:—*

I will confess that I was not very confident that you would all endorse my suggestion, and I am not disposed to quarrel with you about it. However, there are one or two points I will mention. Beginning last, the suggestion that women make good local registrars. I believe it is true, when they can be selected. A good woman, taking interest in the subject and with an eye for details makes a good registrar. The difficulty in selecting good registrars would not be any greater in one system than in the other; it should be no more difficult to secure registrars directly than to secure them through the county registrars. There is one thing, the only point I am going to make in regard to the selection of better registrars, is that they should be compensated more generously for their services. A fee of 25 cents is too small in this western country; it is too small in the east. It was cheap several years ago when a two-bit piece was twice as big as now. It should be at least fifty cents.



I would not urge you against your wishes to make any modification in this law, for I believe you are getting along nicely with it, and from the peculiar character of the population and the interest of the county health officers, you may succeed in getting fairly good registration of deaths, not as good of births. I am convinced by my observations in Washington that you can get better results under the direct system. What I would suggest, since you are not willing to change at present, is that you observe the progress of the direct system in Washington, Oregon and California. I think you will soon see a marked improvement in the California reports. They have been reporting to the county registrars, and I believe you will see a marked improvement under the system of direct reports. I would not take away the compensation that you receive as county health officers, because I believe that the compensation for both purposes is not generous enough for the important duties that you perform. You know your state, your people, your legislature, better than I do and you will understand my remarks to be simply my best opinion from my observations.

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## TUBERCULOSIS AND ASTHMA.

BY

ORVILLE HARRY BROWN, M. D., Phoenix, Arizona.

(Read at the Eighth Annual Meeting of the Arizona Anti-Tuberculosis Association, at Douglas, Arizona, April 17, 1917.)

Soca and Krez have expressed the view that all or nearly all asthmatics are tuberculous. Bruglemann, Sarda, Vires, Grasset, Rancoule, Bauer, Fraenkel, Jesson and others have held not only that tuberculosis and asthma are seldom found complicating each other, but that the one is actually antagonistic to the other. Others have held that in isolated instances tuberculosis might cause asthma, or that asthma might lead to tuberculosis. But I have reviewed the literature elsewhere.

Asthma is relatively infrequent when compared with the incidence of tuberculosis. Therefore, unless there actually exists a definitely antagonistic action between the two diseases, it is to be expected that some asthmatics will be found who have tuberculosis. Most individuals with a nearly latent tuberculosis exhibit insufficient evidence for a positive diagnosis. For this reason asthmatics may have a tuberculous factor on which their asthma is distinctly dependent without the proof being apparent.

I make the statement without fear of contradiction that tuberculosis is not in any case dependent upon asthma. And, to decide whether asthma is in any degree dependent upon tuberculosis, must be attacked from another angle than the demonstration of the co-existence of the two.

I have previously advanced what I have called the "non-passive expira-

tion" theory to explain asthma. With the elucidation which this theory brings to the subject, I have concluded that tuberculosis is a common contributing factor to asthma.

My explanation holds asthma to be due to a mechanical disturbance of the circulation of blood and lymph through the bronchial mucosa, and that this is from forceful expirations. A healthy bronchial mucosa may be converted into an asthmatic mucosa by no other cause than that of muscular expirations. Ordinarily, however, inflammatory congestion and edema help along; and they do this by acting in a dual capacity, first actually narrowing the lumen of the bronchi and second, producing an irritation of the nerve endings, which sets up forceful expirations. This active expiration, and this alone, leads to that condition which makes relatively easy inspiration, difficult prolonged expiration, wheezing, piping rales, more marked on expiration,—emphysema, and secretion of mucous, casts, pellets, etc.

The physiology of asthma, as I see it, is complicated but relatively simple. The rigid walled bronchi end in thin walled collapsible tabules which spread out into the broad expanse of a lobule. The bronchiole widens rapidly, dividing and redividing until the infundibulum with its many air cells is reached. The numerous ramifying pockets of the lobules constitute what I have called a muffler construction. Or to put it another way, the lobule may be compared to a great convention hall with but one exit. An overflowing crowd will leave the great hall without confusion and without harm if calm and quietude prevail. But if through excitement, an attempt is made by the mass to unduly hasten its egress, at once the exits and aisles become congested, perhaps even hopelessly blocked, and the passing out will be greatly hindered.

An analogous condition occurs in the alveoli and other divisions of the lobules when much force is applied to expiration. The air wanders about from one blind pocket to another, the bronchiolar wall may be collapsed, a loose edge of a dividing wall lops over the bronchiolar opening, the exit of air is greatly hindered, and the intra-lobular air pressure is raised much above normal.

The heightened intra-alveolar air pressure exerts a profound effect upon the blood and lymph circulation. Even normal expiration has positive action upon the circulation, as shown by blood pressure tracings. Forced expiration dams the blood forcibly to all areas of atmospheric pressure—to the limbs, to the neck and head, and to the interior of the bronchi. The lymph is affected similarly. In man the arterial blood pressure rises during expiration, hence there is more blood pumped to the bronchial mucosa during a forceful expiration than during a normal expiration. Therefore the active and the passive congestion which occurs during expiration because of the force applied to expiration, coupled with the swelling which already existed within the bronchi from the inflammatory or anaphylactic process, may be sufficient to greatly impede the exit of air.

One swallow does not make a summer, or the possession of a few dollars imply wealth; so a few coughs or one attack of dyspnea does not prove asthmatic conditions. The more protracted the forceful expirations—the coughing, sneezing, dyspnea, etc., the more opportunity for developing asthma. Hence if there is a chronic bronchitis lasting for months or years, or a frequently recurring anaphylactic reaction, the non-passive, active expirations may develop an asthmatic state.

Chronic bronchitis is sure to be complicated with involvement of the pulmonary tissue, and this usually means the presence of the tubercle bacilli. The chronic bronchitis may exist because of the pulmonary tuberculosis; or the pulmonary tuberculosis implants itself and gains a foothold in the fertile soil produced by invading organisms of the bronchitis.

It is generally admitted that a large percentage of all asthmatics have previously had chronic bronchitis for from a few months to many years. Hence the likelihood of asthmatics either having tuberculosis or of their becoming tuberculous is very great. My observations in the asthmatics I have studied and my conclusions from the above course of reasoning are that most asthmatics are tuberculous or are fit subjects for tuberculosis. The disease, however, is ordinarily of a slow type.



## ARIZONA NEWS.

Among those attending the Southwestern Conference on Tuberculosis, at the Grand Canyon, October 22nd and 23rd, were Drs. Metzger and Thomas, from Tucson; Dr. Williams, Rev. B. R. Cocks, Miss Gilchrist and Miss Wilton, Phoenix; and Dr. Flinn of Prescott.

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Dr. T. J. Bouldin, of St. John's, recently passed his examination for the Medical Reserve Corps.

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Lieut. Wm. H. Sargent, after finishing his training in the Los Angeles School of Roentgenology, has gone to Fort Oglethorpe, Ga., in active service.

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Capt. R. D. Kennedy, of Globe, has been ordered into active service and has left for the front.

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Dr. F. C. Norman, formerly of Hayden, Arizona, has been appointed Superintendent of the State Hospital, succeeding Dr. Walls, who resigned after serving two months.

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Dr. A. C. Kingsley has returned to his old location at Nogales, where he will, no doubt, be welcomed by his many friends. Dr. Kingsley served efficiently as Superintendent of the State Hospital for four years, during which time many improvements were made in the service and medical organization of the institution.

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The State Board of Medical Examiners, newly appointed, are as follows: Dr. A. L. Gustetter, Nogales; Dr. Coit Hughes, Phoenix (Secretary); Dr. R. M. Tafel, Chloride; Dr. A. Garfield Schnabel, Tucson; Dr. D. L. Conner, Phoenix (Osteopath).

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The Sisters' Hospital at Phoenix, which was nearly destroyed by fire recently, will be rebuilt of incombustible construction, with a \$30,000.00 fireproof annex, which will house the surgical departments, X-Ray department, and City Ward. The funds for this purpose have been secured. In addition to this, there will be a tuberculosis department with a solarium; this portion of the building will be placed upon the new \$30,000.00 service building which is nearing completion at the present time.

## BOOK REVIEWS.

**Asthma: Presenting an Exposition of the Non-Passive Expiration Theory.** By Orville Brown, A. B., M. D. C. V. Mosby Co., St. Louis, 1917. Price \$4.00. 36 illustrations.

Modern dictionaries give three columns defining the various kinds of asthma and there is hardly one on which Dr. Brown has not brought to bear his comprehensive judgment. "Asthma" we (think) we all understand, but, to understand the author's claim that "preasthmatic states can be recognized by the Non-Passive Expiration Theory; can be successfully combatted and the treatment removed from the field of empiricism and put on a rational and scientific foundation, an honest weighing by the reader of the evidence submitted is essential, no mere review will do."

The treatment of asthma used to consist in carefully excluding any fresh air. The bed and door were curtained; a "draught-excluder" put along the window frame; the window opened about six inches once a day; the invalid's face being then covered. There were asthmatics who retired to one room when autumnal fogs set in and remained there until spring, with its east winds, was past.

One curious problem remains unsolved, that of climate, or even altitude. Acute cases have improved in low-lying, damp places and been comparatively well in London fogs, while others nearly die; some cannot live on the coast; others thrive there.

Interesting statistics as to hereditariness are given. "You can get the devil out of a man's heart, but not his grandfather out of his bones," said a wise Scotsman. The reviewer knew four generations of asthmatics; a member of the last—perfectly healthy herself—went to South Africa and married a healthy man. Their third child was so tormented with asthma when only an infant, that they took her back to England to consult a specialist, but the condition has not improved. "Comby gives a series of 56 cases, all of which began before three years of age."

Massage is advised, but perhaps not sufficiently emphasized. The reviewer has seen many cases, particularly in children, where prolonged abdominal massage has caused complete relief pro tem., and provoked restful sleep. With regard to diet, the author agrees with the findings of most specialists, that each must be a law unto himself. A piece of cheese or mince pie will cause great dyspnoea in some, while others need not use much self-discipline in eating. The question of idiosyncrasia is also an important factor meriting attention.

The whole volume is modestly written, almost as if inviting readers to a consultation; the individuality of the author is sunk in his anxiety to get from his own theories and from every specialist quoted that which may give speedy relief.

—D. W.

**The Endemic Diseases of the Southern States.** By William H. Deaderick, M. D., and Lloyd Thompson, M. D., of Hot Springs, Arkansas. Octavo. 456 pages; 117 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Cloth, \$5.00 net; half morocco, \$6.50 net.

A closer study of tropical and semi-tropical disease has lately been rendered more imperative owing to the intermingling of many nationalities on the battlefield, for the germs of many diseases hitherto unknown in Europe, have taken hobo journeys and turned up in camps to surprise and puzzle the medical staff. This makes every lucid volume dealing with the subject particularly useful to the over-worked army doctor, and Doctors Deaderick and Thompson are useful adjuncts.

The authors of the book under review have succeeded in giving the profession a comprehensive work on tropical and semi-tropical diseases endemic in the Southern Atlantic and Gulf States; the article on malaria being an exhaustive treatise on the subject, the extensive statistical compilations making the work even more valuable as a reference than as a text book. The photographic reproductions of the larval and pupal stages in the development of the anopheles and culex mosquitoes are excellent, and the symptomatology of malaria is particularly clearly defined.

The work on pellagra is especially valuable because of the liberal consideration of the opinions and theories of so many workers on this comparatively obscure disease. The authors do not hesitate to entertain the logical opinions of any writer or worker who has contributed to the etiology or treatment of pellagra, and are modest in their own assertions.

The descriptive text throughout the book is vivid and comprehensive, and while the work is too voluminous for use as a clinical hand book, it will meet every need for a study of the diseases dealt with.

—B. F. J.

**Recalled to Life.**—A Journal Devoted to the Care, Re-education and Return to Civil Life of Disabled Soldiers and Sailors. Edited by Lord Charnwood. John Bale, Sons and Danielsson, London. Monthly, 50 cents.

There used to be a popular game in England called "Here comes an old soldier and what will you give him?" The war veterans of those days receiving an average sum of 18 cents a day, and, being short of a limb, could not get well-paid labor. But, even as post-operative care becomes ever more insisted on, so, post bellum care is now engaging the thoughts of all in authority in Europe and is already receiving notice in America. To "reconstruct" a soldier before he is discharged; to teach him remunerative work, is the main idea, not to let the men drift about the world as useless and semi-invalids. "The problem of re-education consists not in learning a new trade but in acquiring dexterity in the use of an artificial appliance." The management of Neurasthenia is ably taken up by Colonel Sir John Collie, who wisely says that "it is not fraud, nor malingering, nor wicked self-deception, and above all it is not cowardice." He gives interesting accounts of the various "shock hospitals" and results obtained. The committee on institutional training gives valuable hints, as it goes into the question of cost. The description of work done in Europe, India, and the British Colonies tends to a just weighing of that which is best, and ought to help in that which the last circular from Washington asks: i. e., a report from surgeons giving cases of re-construction and work done by men severely handicapped. These reports will be used by the War Department for the use of doctors and the cheering-up of the wounded soldiers.

—D. W.

**The Medical Clinics of North America. Volume I, Number II (The Philadelphia Number, July, 1917.)** Octavo of 269 pages, 28 illustrations. Philadelphia and London: W. B. Saunders Company, 1917. Published Bi-Monthly. Price per year: Paper, \$10.00; Cloth, \$14.00.

In this number Dr. Thomas McCrae leads off with a clinic (several clinics combined) on Aortitis. He insists that the usual source of rheumatic fever or syphilis for which he quotes his own clinical experience. Dr. Joseph Sailer follows in his wake with a clinic on Aortic Aneurism and gives some interesting points on pulselessness with a maintained circulation. In Progressive Nycocarditis, useful differential diagnosis is made between cardiac and renal symptoms; also on determining the position of the apex beat. Angina Pectoris and Allied Conditions is given by Dr. A. A. Stevens, and Ulcerative Endocarditis, Secondary to Dental Sepsis, Treated by Autogenous Vaccine is from the clinic of Dr. Judson Deland. Any connection between bad teeth and this disease would have provoked some curious criticism fifty years ago.

One enemy, Poliomyelitis, which always seems waiting to descend in epidemic form is ably dealt with in Dr. T. H. Weisenburg's Study of the 1916 Philadelphia Epidemic; 717 cases. The seven forms of the disease are amply dealt with; the question of personal contagion dismissed as erroneous. Altogether, this "Philadelphia Number" brings the reader into the company of men who have all something to say worth saying, and who state their experience in concise and intelligent wording.

—D. W.

**The Diagnosis and Treatment of Tropical Diseases.** By E. R. Stitt, A. B., Ph. G., M. D., Medical Director, U.S. Navy. Second Edition. Cloth. Price \$2 net. Pp. 534, with 117 illustrations. Philadelphia: P. Blakiston's Son & Co., 1917.

A most useful and up to date book to the practitioner living in tropical and sub-tropical regions, for the subject is treated tersely and thoroughly, showing wide experience and much research.

Malaria, Dysentery, Plague, Leprosy, Yellow Fever, Dengue, Beriberi, Filarial Infection, Parasitic Diseases and Skin Diseases of the tropical and sub-tropical regions are specially well handled.

Pinta seems to have been dismissed with a few words as a disease prevalent only in Mexico, South America and the West Indies, whereas we know that it has been reported in Egypt, Sierra Leone and Madagascar.

The writer has found several cases of Pinta amongst white Americans in El Paso. For this reason we read with special interest the brief treatment of this subject. Nerve Leprosy many times clinically resembles this disease and Pintas have been detained by authorities as Lepers.

It has fallen to the writer several times to assist in the diagnosis of these cases.

There is a local anesthesia to heat sensation over the spots in Nerve Leprosy, whereas in Pinta we encounter a hypersensibility so that one can readily make the differential diagnosis with a hot sound.

The new chapters added (in this, the second edition). to the section on Diagnosis and Treatment of Tropical Diseases are specially valuable. and practical.



We note that the Oroya Fever, so-called, is not spelled Arroyo. This disease occurs in the arroyos or canyons of the western slopes of the Andes. When given the correct Spanish spelling, "Arroyo," the name describes its location. Since in our own southwest this word arroyo is commonly used and correctly spelled, we see no scientific reason for changing its spelling to Oroyo.

This book is of portable size and a valuable addition to the literature on this subject.  
—H. V. J.

**CANCER—Its Cause and Treatment.** By L. Duncan Bulkley, A. M., M. D., Senior Physician to the New York Skin and Cancer Hospital, etc. 1917. 12 Mo. Cloth, 282 pages. \$1.50 net. Paul B. Hoebler, New York.

Few questions in pathology are of greater interest and importance than the origin of cancer. On the answer the practitioner is prepared to give depends the success of the practice he is about to follow. It would be strange if a disease which holds its own with such a terrible grasp were not regarded as having an origin far deeper in the system than a fatty or an adenoid tumour. Although the Horatian dictum as to the self-assertion of nature is, unhappily, the general experience of those who excise cancers, there are cases which show the rule not to be always universal, and the question of heredity has even a brighter aspect, the author more strongly negatives this than those who gathered statistics in 1871.

The present volume is an interesting showing of the author's theory of cancer causation. He suggests that the local lesion is only a symptom and the cause to be found in metabolic changes due to improper diet and advocate a regulated course of feeding. The writer does not claim priority, but weighs the accumulated evidence as to prophylaxis. Where certainty (for him) ends, he does not indulge in theoretical disquisition but proceeds with caution, giving us, as every author should: "Results and Personal Cases." He calls cancer "a disease of advancing civilization," but it is rather the often irrational demands of civilization which propagate disease, not the condition itself.

Dr. Bulkley is always worth listening to on this subject, and the profession will be edified, not wearied or puzzled, after studying the book.

—H. V. J.

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## TIBIALE EXTERNUM

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BY

F. P. MILLER, M. D., El Paso, Texas

(Read before the El Paso County Medical Society, October 15, 1917.)

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Comparative anatomy inspired our early anatomists in the search for variations in the human skeleton. Each dissecting room contained a group of men looking for deviations from normal structures and complete records of the supernumerary bones found were kept.

Since the advent of the X-Ray the surgeon is constantly finding these deviations, showing that these are not so rare as supposed from post-mortem reports. The X-Ray is also separating these conditions from the vague classification of diseases based upon symptoms alone. In 1915, I reported a case of bicepital ribs with failure of the development of one body or centrum of a thoracic vertebra producing a wedge-shaped half-centrum which was ankylosed to the vertebrae above and below. This was explained by a study of the development of the nucleus for the body which becomes bilobed or dumb-bell shaped and one side failing to develop. This case was diagnosed as Torticollis and an operation had been advised.

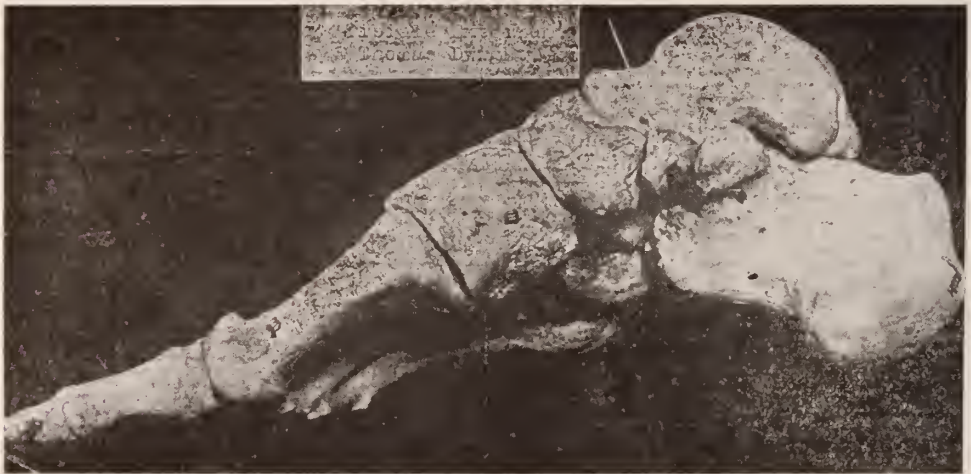
In this paper I would call your attention to the presence of an additional bone in the tarsus, the *tibiale externum*, which produces deformity and symptoms which closely resemble talipes valgus or flat foot. I desire also to call your attention to the close resemblance in skiagrams of this condition and a fracture of the tuberosity of the *scaphoid*. This is especially of value after traumatic injury to a foot where the physician might go on record that the X-Ray showed a fracture. A close study of the other variations to be found in the carpus and tarsus shows that there are many such conditions that might lead us into an error. A divided scaphoid without fracture has been reported. (1) Thomas Dwight also shows a supernumerary bone, the *triangular*, which might easily be thought to be a fracture from the styloid process of the ulna.

To properly appreciate the occurrence of these variations, we must remember that the embryo often presents centres for bone which later disappear or fuse with other bones. If these centres persist or grow, they will slowly produce modifications in normal shape and size of the parts



that will escape notice until injury directs attention to them by a careful examination and the X-Ray.

The shape of the scaphoid varies a good deal, due to the shape of the adjacent bones, especially the *os calcis* and the *astragalus*. Its outer surface is rough for the attachment of ligaments, whilst the inner forms a large and prominent eminence, the scaphoid tuberosity which affords an important attachment for the *tibialis posticus* tendon. Morris says, "the *tubercle* of the *scaphoid*, occasionally develops separately, and sometimes remains distinct from the rest of the bone." In his description of the *tibialis posticus* tendon he says "just above its insertion into the tuberosity of the *scaphoid* bone, the tendon often contains a sesamoid bone." (2)



Thomas Dwight, (1) states "the *tuberosity* of the *scaphoid* is not necessarily the same as the *tibiale externum* but may vary within certain limits. When the projection is very large, particularly when its end is more or less marked off and especially if it is turned backwards, we have to do with a *tibiale* more or less perfectly fused with the tuberosity. The *tibiale externum* is commonly known as the sesamoid in the tendon of the *tibialis posticus*, but it is a bone part of the skeleton, being found on many mammals and being cartilaginous in the second month of the embryo. It is more or less involved in the tendon of the posterior tibial. It is sometimes quite free, having no close connection with the *scaphoid*, but, as Pfitzner has shown, is never involved in the tendon. (1) This fact makes the surgeon more inclined to remove the bone where symptoms warrant.

Report of case: E. D. F. Female, age 10. Rather large for her age, weighs 110 pounds. Family history does not show any member to have had any deformity. Previous history negative. No abnormality in feet noticed until about one year ago she began to complain of occasional pain in left foot. Tired easily after standing or walking. The family noticed that the left foot was gradually turning inward. That the left shoe was

altered in shape, with a projection on the inner side in front of the ankle. A diagnosis of flat-foot was made and an arch was worn for a time with relief. At this time the arch of the foot is not as high as normal. The right foot also seems to fall below normal lines. Over the scaphoid of the left foot is a distinct projection under the skin. This surface is red and tender, the patient says due to the pressure of the shoe. The parents notice that the patient is becoming cross and nervous which is contrary to her previous condition. This they think is more marked if the girl has been on her feet for a long time. No history of injury.

The X-Ray shows a well marked projection of bone at the tubercle of the scaphoid. There is a distinct line however separating them which at first glance might be taken for a fracture. This is a *tibiale externum* placed between the *scaphoid* and the *sustentaculum*. It is evidently joined to the scaphoid by synchondrosis.

The X-Ray shows a similar condition on the right foot, but not so well developed or perhaps fused with the tubercle of the *scaphoid*.

Case No. 2: Kindness of Dr. Jno. Tappan. Mr. A. L. McK. Age 38. Weight 180. Developed flat-foot before 18 years of age. Suffered pain in feet after standing on feet or walking for some time. Found most relief from wearing special shoes made with arches in shoes. Even when wearing shoes, at intervals would suffer with pain in feet. There was a projection inward along the inner border of foot in front of ankles. X-Ray showed well marked *tibiale externum* on left foot, and small bone in right foot. Was operated on in Presbyterian hospital in Chicago by Dr. D. B. Phemister. Put feet in plaster Paris cast for two weeks—on crutches for two months.

#### *Treatment:*

An incision should be made over the projection and the *tibiale* removed. Due care to avoid the tendon of the posterior *tibiale* and to refrain from disturbing the attachment of the tendon to the scaphoid. The foot should be put up in plaster cast remoulding the arch of the foot. This should be worn for two months, and crutches used until all soreness gone.

- (1) Thomas Dwight. A Clinical Atlas. Variations of the Bones of the Hand and Feet.
- (2) Morris. Anatomy.

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#### *Discussion:*

Dr. Cathcart said the first one he saw he called a fracture. This patient went to Chicago and they told him what it was. It may be that more of these foot troubles are due to this bone. If this case just reported gets well he will have some faith in the operation.

Major Ingalls said that when one was crippled from this trouble the deformity should be treated along surgical lines just as any other surgical condition should be. An effort should be made to operate so that the patient should have a useful foot after the operation.

Captain Lynch said that this was new to him, and if he had run across it he would have called it a fracture or a sesamoid. Dr. Miller's suggestion regarding treatment he believes is practical and feasible. Where it causes deformity and pain the only thing to do is to remove the cause under aseptic technique.

Dr. Strong said that he never saw a flat footed man who was pigeon toed, and that these two conditions did not go together.

Dr. Tappan said he saw this case that Dr. Cathcart had said was a fracture. The patient had gout complicating his trouble which obscured the diagnosis, but afterwards the gout grew better and he went to Chicago the case was quite plain. He asked Dr. Cathcart if the man had a fallen arch, and Dr. Cathcart answered yes.

Dr. Miller said that with reference to the girl being pigeon toed he had not noticed it. After a while she probably will be. He noticed that the other pictures nearly all showed that the arch comes down. From a study of the anatomy, one reason we remove the bone is that the tendon of the posterior tibial gets a better leverage—the tendon has to pull around the bone, the bone not being in it. The angle at which the tendon works is improved.

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## THE EXAMINATION OF RECRUITS BY THE X-RAY

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BY

A. G. SHORTLE, M. D.

(Read at the Southwestern Conference on Tuberculosis at Grand Canyon, Arizona, October, 1917.)

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It was with considerable consternation that I received the request that I should read a paper at this meeting on the "Diagnosis of Tuberculosis by the X-Ray in War Times." I happen to possess a very complete X-Ray equipment and I think I can interpret a plate fairly well, but I do not pose as a roentgenologist. I did my part in examining the New Mexico recruits, but I can hardly claim to be a military surgeon; however, I accepted the burden and then shifted a good part of it on my friends who are doing military work.

The first I appealed to was Dr. E. S. Bullock, who has taken a prominent part in examining 15,000 regular troops at El Paso, and his reply in part is as follows:

"It is very easy to reply to your query, for the quite simple reason that the X-Ray has an extremely restrictive field of usefulness in the examination of recruits. Why? Because it does not tell the truth. The X-Ray picture shows the foot marks of tuberculosis, in the individual's life. It is absolutely essential that fibrosis be present if the X-Ray is to show anything at all. Petrification is shown as well. Caseous tubercles are penetrated by the X-Ray as though they were not there.



"The members of my board do about 100 examinations each, per day. Can you imagine our having time to monkey with X-Rays? Further we do not try to take out the things that are shown by the X-Ray. Healed tuberculosis in a subject in perfect health is not and should not be a bar to enlistment. Extensive old lesions will throw a man down even if they are healed, but one does not need the X-Ray to show such things. Most people will show these tracks of tuberculosis in an X-Ray plate, and if we were guided by the data obtained through plates, we wouldn't have any recruits.

"This work has undergone an evolution with my board, and I expect with every other board that is working in the United States. We have eliminated percussion as a waste of time, same is true of voice and whisper. We do not question the subject, without there is definite reason for doing so. We simply have the subject cough and breathe 24 times. Six times for each lung, front and back. Anything suspicious is set aside and carefully gone over, questioned, sputum studied, and in a broad and practical way every case with localized moist rales is eliminated from the army.

"Among the fifteen thousand regular troops stationed at Fort Bliss, we found .88% of tuberculosis by the method indicated in this communication. Subsequent sputum examinations showed between 60 and 70 per cent of these to have positive sputum. We are inclined to think that the pulmonary manifestations of tuberculosis precede the development of all symptoms, by many months and often a year or two.

"We have found that lesions of the base are as common in early tuberculosis as of the upper lobes. I have digressed somewhat from the subject of the X-Rays, thinking that these other facts might interest you. At first we used the X-Ray plates quite frequently and now not at all. Practically what does that mean? Why, simply that they aren't worth a damn, that's all."

Very sincerely,

(Signed) Bullock.

I always expect something emphatic and decisive from Dr. Bullock and this letter is very satisfying in that respect at least but it is not flattering to the part that may be played by the X-Ray. Fortunately, I was able to get a report of the X-Ray examination of the chests of the enlisted men of the 69th regiment of the New York National Guard, directed by my friends Drs. Gregory Cole and Joseph M. Steiner, which is as follows:

"The following is a brief report on the Roentgen study of the chests of 1030 members of the 69th Regiment of the New York National Guard. 1030 men were examined, but the findings of only 977 are recorded, because 53 of the plates were unsatisfactory for various reasons; such as fogging, breaking, or movements on the part of the patient. The generator used was of the interruptorless type, and a medium focus Coolidge tube was used.

"The Roentgen examination consisted of a single plate taken in the antero-posterior position. We had previously determined that this would be satisfactory from a diagnostic standpoint. The plates were made with a five-inch spark gap and 35 m. a., and varied from two to five seconds. The entire series of 1030 plates was made with the same tube and transformer without a breakdown. Six men were used in making the plates. One made exposures; one estimated the time of exposures; two were used to place the patients; one changed plates and one numbered the plates. The total time consumed in making the 1030 plates was 71½ hours, or 26 seconds per patient. The developing was done by one man, forty hours being the total time consumed in handling and developing the plates. The interpretation of the plates was done by a group of Roentgenologists who averaged 75 plates per hour, making a total of thirteen hours consumed in interpreting 977 plates. Of the 977 patients examined, 35 or 3.6% showed definite gross pulmonary changes of a sufficient quantity and quality to disqualify them for military service. Thirty or 3.2% showed definite early tuberculous changes in the lung; but these will require further Roentgen and clinical study to determine the activity or non-activity of their tuberculosis. This makes a total of 65 or 6.8% who show definite tuberculous changes in the lungs. Of the 912 cases who have passed as having normal lungs, three cases show definite diaphragmatic adhesions; seven show congenital malformation of the thorax, one shows an absence of a portion of the rib, probably due to re-section; one shows a bullet in the shoulder; fourteen show definite cardiac changes. These include cases of dilatation and hypertrophy and some aortic dilatations. This group will be held for further clinical observation. In interpreting the plates, bronchial gland and hilus tuberculosis was not considered, and only the cases with definite parenchymal, and gross paribronchial changes were considered, as probable bad risks from a military standpoint.

### SUMMARY

"From a study of 977 cases we believe that the following conclusions are justified:

"1. That it is practical to make X-Ray examinations of the chests of soldiers at the rate of two cases per minute.

"2. That while six men were used in this series, the number could easily be reduced to four, and only one of them need be a Roentgenologist.

"3. That one man can easily develop one hundred plates every three hours.

"4. That an individual can interpret plates at the rate of two per minute, leaving the rejected or doubtful cases for further study.

"5. That in the 977 cases examined we found 3.6% of the cases with definite tuberculosis, sufficient to disqualify them for military service, and an additional 3.2% with tuberculosis which will require further in-

terpretation and observation to determine whether their tuberculosis should disqualify them or not."

(Signed) Lewis Gregory Cole,  
Major M. R. C. U. S. A.

Here we have first, the reply from the standpoint of the clinician, second, from that of the Roentgenologist, each of whom is very competent in his own line of work and each of whom has had a large experience in examining recruits. Comparing them we find that Dr. Bullock's objection to the X-Ray on the basis of time expended is hardly well founded. He states that each of the members of his board is expected to examine the chest of one hundred individuals daily, but Dr. Cole says that four men should be able to examine the chests of 977 men by means of the X-Ray in forty hours, the length of time required for developing the plates, and that only one of these men need be a Roentgenologist, or in other words, that four men working eight hours should be able to examine roughly speaking, 200 patients, certainly not an extravagant expenditure of time in a matter so important.

Dr. Bullock and his co-workers found .88% of the 15,000 regular soldiers examined should be rejected as being tuberculous, while with the X-Ray according to Dr. Cole, "3.6% showed definite gross pulmonary changes of a sufficient quality and quantity to disqualify them for military service," while an additional 3.2% showed sufficient trouble to demand further and closer investigation, a total of almost 7% as against less than 1% as determined by physical examination by Dr. Bullock's Board.

Now it is possible that the fact that the men examined by Dr. Bullock were regulars, while those examined by Dr. Cole were militia, might explain a part of the difference shown. I mean that the regular army man is supposed to be a picked man, that he has had to pass a rigid examination by trained army surgeons, while the examination of the National Guardsman is often rather indifferently done. However, the difference is too great to be entirely explained on that hypothesis. To endeavor here to decide whether Dr. Bullock and his co-workers had probably overlooked a rather large number of really tuberculous soldiers or whether Dr. Cole had excluded from the army a large number of really eligible men, means the opening up of the whole subject of the interpretation of the X-Ray plate, as to how much importance for instance, we are to ascribe to paribronchial thickening, what, if anything, may be learned of the caseous tubercle by the radiograph, whether the X-Ray will be any guide in the matter of the activity of the lesions, etc., a subject so great that I would not have the time to discuss it even if I had the ability to do so, so I am glad to call to my aid another friend and one of whom the whole Southwest is justly proud, Colonel Bushnell; until recently in charge of the U. S. Army Hospital for Tuberculosis at Fort Bayard.



In the August number of the American Review of Tuberculosis he says:

"It is not of course practicable to use radiography extensively for the determination of tuberculosis during the examination of recruits. But the X-Ray will doubtless be often employed in doubtful or disputed cases so that it is necessary to consider the rules which should obtain in reading the radiograph."

Time will not permit quoting more than his

### RESUME OF INDICATIONS FROM X-RAY NEGATIVES

The X-Ray shows: 1. Tuberculous disease confined to region of hilus in deep lung. 2. Extension upward towards apex or downward and outward towards base, confined to deep lung. 3. A fine line or two extending to apex with or without small focus or foci there; condition not determinable by physical signs. 4. Clouding of apex without marked lines from hilus, probably largely pleuritic. 5. Well marked lines extending to superficies of apex, usually, but not necessarily, with foci there; lesion accessible to physical examination. 6. Lines extending towards shoulder as well as apex: (a) If confined to deep lung may mean early and now obsolete exacerbation; (b) If extending to superficies denote larger lesion and less immunity than 5. 7. More or less widely diffused spots, lines and streaks through a considerable portion of lower lobe approaching periphery of lung, with few or no auscultatory signs; deep peribronchial tuberculosis. 8. More extensive streaked opacities involving greater part of one or both lungs and extending to periphery with few or many physical signs; fibrocaseous tuberculosis, fibrosis preponderating in proportion to scantiness of more or less rounded spots or dots.

Conditions as shown by 1, 2, 3, 4, and 6 (a) are not causes for rejection. Cases under 5 to be determined by physical examination. Cases under 6 (b), 7 and 8 are to be rejected.

According to this authority, a man who has spent so many years in military service and the last fifteen in just this branch of the work, the X-Ray could be relied upon to debar without further examination a certain per cent of those examined, while it would call attention to and be cause for special examination in others.

Individually I look at this subject from the standpoint of the clinician and I have always placed the stethoscope above and before the radiogram but I have found the latter valuable in many even early cases, or what we term early from a clinical standpoint.

Now in view of the disastrous results to the individual soldier that is passed on to the trenches when physically unfit and in view of the loss to our army in both money and efficiency, and finally in view of the pension list that is bound to come later, and fully appreciating the limitations of the X-Ray, I think we can consider it a valuable adjunct in the examination of recruits.

Although we had almost three years of warning, our country went into this war unprepared and though through no fault of the men who compose it, our medical department was no exception to the rest, consequently I think in most cases it has been impracticable to use the X-Ray. But for the future I feel that I can not be called impracticable or extreme when I suggest the following:

That at each great cantonment, there should be installed a complete and comprehensive X-Ray equipment, with operating and dark rooms sufficiently large for work on a large scale.

That a competent Roentgenologist, a trained assistant, and two or more helpers picked from among the enlisted men be maintained there.

That every recruit besides having a physical examination shall also be radiographed.

I believe that such a procedure would call the special attention of the examining surgeon to a fair percentage of cases that would otherwise be overlooked and result in the rejection of a sufficient number of unfit men to make it pay both from a humanitarian and a financial standpoint.

I learn from Mr. Jacobs that an estimate has been made to the National society, that single plates could be made in these large quantities at 65 cents each.

That the medical department of the Argentina Navy has found the X-Ray of value in the examination of recruits is proved by J. A. Lopez \* who says "Roentgen examination is indispensable in dubious cases."

So in conclusion I will only say that if the X-Ray deserves a place in the examination of the chest in private practice it must have a place in the examination of the recruit, and while I would in either case relegate it to the place of secondary importance, it is yet of sufficient importance to justify much greater use of this means in the examination of recruits.

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\* Abstract J. A. M. A., Aug. 18, 1917. Vol. LXIX. PP 598.

## LOBAR PNEUMONIA IN CHILDREN

BY

G. WERLEY, M. D., El Paso, Texas.

(Read before the 36th Annual Meeting of the New Mexico Medical Society,  
Las Cruces, N. M., October 6, 1917.)

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In scarcely any other disease is a favorable outcome so dependent upon prompt diagnosis and wise and conservative management from the very beginning as in pneumonia. Misguided zeal in attempts to abort high fever supposedly due to la grippe or other obscure cause has, not seldom, turned the balance against recovery in what was, really, lobar pneumonia.

The idea seems to be commonly current that lobar pneumonia is a rare disease in children. I feel sure that Abt is correct when he says that "after the ninth month of life lobar pneumonia is of as frequent occurrence as in adults."

The diagnosis in children is by no means always easy, text-books to the contrary notwithstanding. Definite physical signs are often delayed, appearing only on the third or fourth day, or even later. Recently, through the courtesy of Dr. F. P. Miller, I saw a boy aged seven years in whom bronchial breathing and dullness only made their appearance on the ninth day, the fever finally falling by crisis on the fifteenth. Also there are puzzling cases of very short duration, three or four days or even less. My attention was first called to this fact by Dr. M. P. Schuster at the El Paso Smelter. More recently Le Grand Kerr<sup>1)</sup> has reported a number of such cases.

Then, too, there are difficulties in making a satisfactory examination. I have been deceived by percussion owing to the two sides not being symmetrically placed. Also one will sometimes hear bronchial breathing at the apices behind and lower down near the spine when no consolidation is present. Generally, the physical signs finally become quite as reliable as in the adult. Pain and cough are quite often entirely absent and expectoration is only seen in older children and even then it is somewhat exceptional.

The main early diagnostic signs are:—1. High continuous fever of sudden onset; 2. Marked prostration; 3. Feeble or absent cry; 4. Respiration accelerated as compared with the pulse rate, the ratio becoming 3 or 2 to 1 instead of 4 to 1, which is normal; 5. The grunting expiration; 6. Fixation of the head, neck and shoulders; 7. Disposition to lie quietly in one position and distress on being disturbed; 8. Diminished respiratory excursions and feeble respiratory murmur on the affected side with exaggeration on the sound side; 9. Slight dullness elicited by very light percussion. Vocal fremitus is not a reliable early sign and is



hard to elicit in infants for obvious reasons. Rarely do we find the subcrepitant rale. Friction sounds are heard in pleuro-pneumonia, but these are late in making their appearance.

The fever is generally continuously high and morning remissions are rare.

Some less scientific points are of diagnostic value. Generally speaking, a child who voluntarily rises from the bed or tosses about continuously is not suffering from lobar pneumonia. I have only seen one case of walking pneumonia—that in an adult. A child that cries incessantly is not, as a rule, suffering from lobar pneumonia. A child who takes a lively interest in his surrounding and objects vigorously to being examined is not likely to be suffering with lobar pneumonia.

When the lower right lobe is involved the pain may be referred to the abdomen with rigidity of the right rectus. These signs, together with vomiting and fever, have led to a diagnosis of appendicitis and operation. Respiration may be accelerated in any painful condition, but in appendicitis the pulse-respiration ratio is not so much disturbed and there is no rigidity of the neck and chest and no alteration of respiratory sounds.

As to la grippe: this offers the greatest difficulties. I will only say, hesitate long before making a diagnosis of this mongrel disease. It is too often a cloak for ignorance. Keep on looking for physical signs and you will more and more often discover that la grippe is too frequently another name for unrecognized pneumonia.

The rigid neck and shoulders with high fever and vomiting may simulate meningitis. Reference to the summary of early symptoms of pneumonia should generally suffice for differentiation, together with absence of Kernig's, Babinski's and Brudjinski's signs. Meningitis as a complication of pneumonia comes late.

I have never seen primary pleurisy in a child. It is very rare.

As to prognosis: Kerley had a mortality of two per cent in infants; Holt 3 to 4 per cent in children; and Abt says that it is less than 5 per cent. It is probably the least fatal of all the serious infections of childhood. In strong contrast with broncho-pneumonia and gastroenteritis, the death rate is little affected by poverty, filth and bad hygiene. It is the one disease from which the poor Mexicans recover just as well as the more fortunate. Recovery in pneumonia depends on a good heart, good arteries and good kidneys. In children these are usually sound.

My advice as to treatment is, mostly, don't. Babinski (<sup>2</sup>) refrains from medicine and uses the ice-bag for the pain. He says that under these measures pneumonia has come to be the most successfully treated of all infectious diseases. The inference is rather plain that his previous plan of treatment did not affect the mortality favorably or that the ice bag is a specific for pneumonia. I have not used ice and my mortality has been comparatively comparatively small since giving up early active medica-

tion. Not more than one case in ten of lobar pneumonia in children really needs any medicine at all. Cool air, cool water, early and perfect rest; given these, and nature will make her own cure as a rule. Howland and Hoobler (3) have demonstrated that the blood pressure is from 10 to 15 millimeters higher in cold than in warm air.

I feel sure that routine, radical drug treatment only serves to increase the mortality. Too much fussy attention of any kind is bad, for it destroys rest, which is the very crux of all successful treatment. As a rule, high fever does no harm, though the means used to reduce it may. I generally let it alone. Bathing is good but it can be overdone. Feeding is not urgent. Cold water is the best diuretic. Plenty of urine augurs favorably. When drugs are needed strychnine, sparteine, caffeine and camphor will generally suffice. Creosote carbonate is useful especially where there are catarrhal symptoms. Strophanthin intravenously may rescue an occasional desperate case, but so used it has also caused sudden death; and for that reason Barker advises that it be given intramuscularly. The serum treatment gives promise for the future. The dose is very large; it must be given into the vein and it, too, has caused death. It is only useful in infections of type I. Results from it in the army camps last winter were not brilliant. Especially in children one can well afford to wait for serum treatment until it has been further perfected.

#### REFERENCES.

- (1) Medical Record, April 25, 1910.
  - (2) Journal A. M. A., p. 1219, 1909.
  - (3) Ther. Gazette, p. 494, 1910.
- Also Vaccine Therapy. Sherman, 1916.  
Applied Immunology, Thomas & Ivy, 1915.  
Special Pathology, Beattie & Dickson, 1909.  
Practical Treatment, Musser & Kelly, 1917.

#### *Summary:*

1. Always suspect lobar pneumonia when a child has a continuous fever of 104° or 105° with no other apparent explanation. It is a common disease in children.

2. Never attempt to abort such a fever until you are sure that lobar pneumonia is not the cause. Lobar pneumonia cannot be aborted and any attempt to do so increases the mortality.

3. An early diagnosis is essential so that prompt care may be taken and the patient's vitality conserved.

4. The natural mortality of lobar pneumonia in children is very low. Be sure that you do not make it higher by unwise interference.

## SYMPTOMATOLOGY OF GASTRIC ULCER

BY

TROY C. SEXTON, M. D., Las Cruces, New Mexico.

(Read before the 36th Annual Session of the New Mexico Medical Society, Las Cruces, N. M., October 5, 1917.)

A more difficult problem seldom confronts one than that of recognizing gastric ulcer with any degree of certainty. This is easily appreciated in the review of the literature dealing with the subject. This statement is not intended to embrace those cases presenting symptoms of cardinal type and incidence, but as these are greatly in the minority, it does not impair the relative truth of the statement. Hubert Patterson says "I think there is no disease of the abdomen which is more difficult to diagnose than gastric ulcer \* \* \* I do not think that you can, with any degree of certainty, diagnose a gastric ulcer." Hall makes this statement, "If I were entitled to make any criticism upon our usual attitude towards the diagnosis of gastric ulcer, I should say that we are, first, inclined to look upon the disease as a comparatively rare one; second, that we are inclined to look for a too classical history, especially of vomiting and hematemesis, with a high acidity reported from the laboratory; third, we are inclined to look for a too classical history, especially of vomiting findings and too little upon the results of the physical examination, and we are therefore making far too many diagnoses of hyperacidity when the findings by careful examination of the slightest unilateral rigidity in the epigastric region, associated with local tenderness, should lead us to diagnosticate ulcer instead."

The preponderance of the cases relate only poorly defined symptomatology, and the history which one is able to elicit, is of very little value to you in so far as making your task any less difficult. The lesions may be so small that they cannot be demonstrated on the operating table. There are other cases where the first knowledge to be had of an existing ulcer is found either on the operating, or autopsy table, in whose history there was not the least thing to suggest its existence. With these facts in mind, and with the unsatisfactory results I have had in many instances in arriving at a diagnosis entirely fitting the symptoms, I have gone into this topic with the hope of being able to clear up the matter and of getting as much light from recent literature as I could find. I confess considerable disappointment so far as finding any material that would facilitate diagnosis in such cases.

As found in the review of the literature at my command, the composite symptoms take this form: Early in the spring or the fall, the patient presents a typical dyspeptic syndrome. The initial attack is usually sudden and without any apparent cause. In from one to four



hours after meals, there is pain, distress, or burning in the epigastrium, which may be accompanied by vomiting. There is usually gas, and almost always a hyperacid stomach, occurring at sometime in all cases of ulcer. Or, a belching of a bitter or an acid fluid. The pain or distress is relieved by taking food or water; vomiting or lavage; or an alkaline drink. In other words by "anything that will engage the acid," or remove it from the stomach. For days, weeks, or months, these symptoms recur meal after meal, with the same cadence, then becoming quiescent with a period of good health, and then a recurrence at the usual seasonal period. Associated with these symptoms, some authorities stress points of sensitiveness in the epigastric area, along with some muscular rigidity. In a certain percentage of cases, hemorrhage is a very important symptom, and in many of these cases it may be the confirmatory one, many times being manifest only as melena, or occult blood in the feces, but should be observed on successive examinations, rather than to depend upon one.

If the ulcer is away from the pylorus, the symptoms are lessened, and their pathognomonic character will be lost. The early history is the same as that of the pyloric area, beginning as an acute ulcer, extending over a period of years, with similar cadence of attacks and with similar relief. As a rule the longer period of relief is afforded by the heartier meal. The symptoms at first mild, gradually increase in severity, and finally relief is very slight. Eventually complications cripple the efficiency of the stomach, and then there is no cessation of symptoms. Then the symptomatology resembles that of many other diseases, and the question of differentiation arises.

If the lesion is at the cardiac end, near the fundus, or on the great curvature, the symptoms are quite immediate in onset, persistent, and the differential type is lost. The pain does not yield to food, but is immediately increased. Vomiting is less frequent, more intense, and increased in amount, very acid, and contains remnants of food. Relief is afforded by careful dieting and an empty stomach.

As time adds to the chronicity, or as complications arise, the symptoms become continuous, or those common to many other diseases. The appetite and general nutrition which in the earlier stages were unaffected, in the latter stages may fail, because of the increase in the severity of the symptoms; or the failure to relieve them; or even by the increased distress by food, rather than by relief as formerly experienced.

All writers agree upon one point: that of the very great importance of the history in all cases of gastric disturbances, especially in the matter of sequence and the inter-relationship of the symptoms. Here in many instances lies the key to the situation, and may be the only way in which the diagnosis may be arrived at. Where ulcer is suspected the early history of all cases must in many instances decide the diagnosis, because the later symptoms of gall stones, appendicitis, cancer of the stomach, pan-

creatitis, angina pectoris, kidney lesions and many general diseases are so similar that only it can help us out of the dilemma.

Mayo has called attention to the fact that any disturbance of the duodenum, and under certain circumstances the mid gut—the intestine from the ampulla of Vater to the splenic flexure—causes the pylorus to close, retaining the food in the stomach, causing dyspepsia, indigestion, and gastric distress; purely a reflex. This is the reason why gall-bladder, the appendix, pancreas, and certain other conditions necessarily produce symptoms that must be dwelt with when ulcer is under consideration.

In gastric ulcer pain is a most important symptom. Its character, its cadence, its relief, its relations to other symptoms must all be thoroughly thrashed out and understood. Its onset is sudden, both in relation to general health, and to the stomach as a system. It has a definite relationship to the intake of food, depending upon the position of the ulcer. The nearer it is to the cardia, the sooner after a meal does it appear, and in nearly all ulcers outside the pylorus, food relieves the pain at once. In some cases however, food increases rather than relieves the suffering. The pain has been described as a distress, a burning, colicky, a deep boring distress, or as hunger pain. The symptom is usually associated with hyper-secretion and hyperacidity, and pylorospasm. Hypersecretion and hyperacidity give rise to eructation or even vomiting of either a sour or a bitter material, whereby relief is afforded the patient. While this is the usual sequence and behavior with recent ulcers of the stomach, sooner or later changes in the organ will take place, giving rise to complications and the development of sequela, changing the symptoms in character and relationship, which may be very misleading in arriving at a correct solution of your problem.

Hyperacidity exists at some time or another in all cases of ulcer, and is said to be a more constant symptom than pain. It is one that is not as constantly observed by the patient, because as a symptom it is not as distressing, and consequently is not considered as an incident to the disease. Too it is a symptom that is frequently observed in the life of almost all of us, making it rather commonplace and due to some error in diet. It is a common element in the so called bilious condition, as all of you have undoubtedly observed. If acidity is associated with pain or distress, it becomes more important as a symptom, than when existing alone, and if relief is afforded by taking food, ulcer is almost certain, especially accentuated if these seizures come on at a definite time after meals, and equally regularly relieved if food be taken. This acidity in the opinion of Graham, is a very important symptom, and he states that "in the absence of pain, gas, vomiting, distress—sour stomach be present—appearing and disappearing with characteristic regularity before meals and after meals, ulcer should be strongly suspected." Hall likewise places considerable importance upon hyperacidity as a symptom, as he states

that if associated with the slightest unilateral rigidity and associated with local tenderness, it should lead us to diagnose gastric ulcer.

In most cases there exists an exaggerated tone of the recti muscles, especially situated over the seat of ulceration. Many writers claim this to be one of the most positive and important points in symptomatology. Hall thinks that if associated with rigidity, that it must be considered a more important one than any other sign of ulcer. Murphy stated that local sensitiveness over the ulcer zone on pressure is a most important sign. It is quite remarkable however, that in looking over the literature, to see how few writers and clinicians make mention of local tenderness and muscular rigidity; and points of reflex pain or tenderness. These latter points are said to be frequently found at the point of the 10th rib; at the left of the spine; and the upper dorsal spine is frequently sensitive to a sight tap with the percussing finger. These points of sensitiveness are not to be considered very reliable, as Seidel has found that they might be found anywhere from the junction of the 10th rib to that of the 2nd one, and that they might be observed on either side of the spinal column, which he claims to depend upon the position of the ulcer in the stomach.

As to the laboratory findings and reports in determining the condition, alone they cannot be depended upon. They are only valuable in assisting to a diagnosis, but cannot be considered a controlling factor in, and must be corroborated by other phenomena. One examination should not be considered a criterion, and the contents should be subjected to repeated examinations, to be of any assistance in arriving at a definite conclusion. Hypersecretion of the stomach, with absence of remnants of food, is very suggestive of ulcer. Hyperacidity is found in about 60% of the cases of gastric ulcer. Finding of blood is only of a relative diagnostic value, as there are many conditions that may yield the same results.

Roentgenological examination in the hands of a competent experienced man is very valuable, and is said by Eusterman to be "sharing honors with the usual clinical diagnostic methods." The examination should embrace the use of the plate as well as the screen, as evidence of a combined nature will be at hand, and naturally more dependable.



## MEDICAL INSPECTION OF SCHOOL CHILDREN

BY

IRVING McNEIL, M. D., El Paso, Texas.

(Read before the El Paso County Medical Society, September 9, 1917.)

(Medical Inspector El Paso City Schools)

Medical inspection of school children is a branch of public health work which, like every other effort in this field, must have cooperation of the medical profession in order to succeed. The support of public sentiment is also required.

Although it had been customary for a number of years to require certificates of health for the teachers in our public schools, it was not until two and a half years ago, during the administration as health officer of the late Dr. W. C. Kluttz that a systematic inspection of all children in the city schools was undertaken. The work now includes: Examination for contagious diseases, particularly of the eyes and respiratory passages and those manifested by skin lesions and general hygienic and sanitary supervision with reference to light, ventilation, etc.

There are at present in our public schools just a few less than 10,000 pupils. These are divided among thirteen schools for whites and two for negroes, some of the largest schools having more than 1,200 pupils each. This large number of pupils, increasing rapidly in our fast growing city, has inevitably produced the overcrowding problem with a solution sought by the acquisition of additional quarters adjacent to the main buildings. Visits of inspection are made every day throughout the school year. It is customary to make regular rounds of the various schools, which with the present attendance it is possible to do about once a month. Besides this the inspectors are subject at all times to special calls in the event of the outbreak or suspected outbreak of a contagious disease among the pupils.

With the opening of the schools in September a general examination of vaccinations is made. All who have satisfactory scars not more than six years old are passed. To those whose scars are seven years old or older, to those who state that they have been vaccinated but "it would not take," and to those who have never been vaccinated, written notices are given instructing them to have vaccination performed and to return the notices to their respective teachers properly endorsed by a physician within a few days. Particular stress is laid on those who have been vaccinated but unsuccessfully. It is believed that they are laboring under a false sense of security and to that extent are worse off than those who have never been vaccinated at all. The case of a person utterly immune to vaccination if properly done and persevered in, is rare indeed. Those who have had smallpox are treated simply as having been vaccinated and

if more than six years have elapsed since the attack vaccination is advised. Hypodermic vaccination, so called, should be discouraged, as it is impossible to tell whether a successful vaccination has resulted from it or not. The city health department holds that children who have had that method used upon them should furnish a certificate of vaccination or revaccination every year as the only safe course. Children requiring vaccination are encouraged to go to their family physicians but for those without means, vaccination without cost is provided at the city health department's headquarters.

Following the first general inspection for vaccination, as the cold season advances, examination is made for throat and nose troubles, and at the same time general inspection is made of the scalp, eyes, ears and skin. Cultures are taken for laboratory examination when occasion requires. Cases of contagious disease thus found are immediately removed from the school and action taken as regards contacts. Children found with affections detrimental to themselves though not dangerous to others are advised by use of a printed blank form to consult a physician for the needed treatment and those unable to do so are referred to the free dispensary.

Last year there were 171 visits of inspection, during which not less than 106,000 inspections were made. The number of throat cultures taken for examination for diphtheria bacilli were 649, a fair percentage of which were positive and as a result of which a number of cases of diphtheria and diphtheria carriers were removed from the schools and quarantined. In this way also cases of trachoma were weeded out and treatment instituted at a stage of the disease when most could be hoped from treatment and at a time of life when cure was most important.

Medical inspection of school children is carried out in more or less degree in the various cities of the United States and to some extent in rural communities. In one city the idea has been elaborated to a high degree, even to the extent of employing a dentist to keep in order the teeth of the school children without expense to them and the employment of a trained nurse to visit their homes. It is questionable if it would be advisable for us here to go so far at the present time even if there were not financial and other difficulties in the way, but there are needs for which provision ought to be made. Not the least of these is the condition of overcrowding. Besides having to crowd children perhaps more than should be in some of the main school buildings, where it has been necessary to acquire additional quarters in adjacent buildings there occurs the evil of improper housing. Buildings not originally intended for school purposes have been converted into school rooms but not without the sacrifice or lack of a number of features found in the most hygienic class rooms. It may be stated here, however, that no criticism, but rather praise, is deserved by those in charge who have done the best they could

under the circumstances. It must be considered that when we take children out of their homes and into the schools, as at present compulsory in Texas, where they are kept for approximately one-fourth to one-third of the twenty-four hours, we assume a responsibility for their safe-keeping both as regards the individual and the community. It is not enough to claim that in many instances children are better housed at school than at home. Such a claim would be offset by the statement that in many instances they are not so well housed. As a matter of fact, as a purely hygienic point it might be claimed that they would be better off during the usual school hours if they were not housed at all but were allowed to run free in the open air.

It would be profitable if provision could be made for a more thorough examination of children with a view to ascertaining if they have chronic affections such as tuberculosis in order that better provision might be made for the individual welfare of such as well as the protection of others. This might be slow work, but, if a medical examiner so employed could get around only once in six months that would not be giving the children any better protection than is afforded the cows of the dairy herds supplying us with milk.

Another feature that is being utterly neglected is the matter of private schools and denominational or mission schools which are attended by a considerable number of children of our city. No medical supervision whatsoever is provided for these schools.

In conclusion, it might be said that limited as the work is, we are doing a general improvement has resulted in cleaner children with brighter, happier faces to be seen in the class rooms. We only regret that the work is so limited and earnestly hope that provision will be made for its extension.

Discussion opened by **Dr. Richmond**:—It is to be regretted that these examinations cannot be made more thorough. We should have a greater number of examiners and more time. I feel that it is an economic problem and that these examinations fast develop a knowledge of conditions that we know exist in the child. There is a tendency on the part of parents to resent the reports made by the examiners. I believe a great deal of that is being overcome by the family physician. The reports are usually carried to him. Probably a more thorough examination would develop the fact that more children have tuberculosis. A tuberculosis recognized in the early stage gives a child a better chance. Of course these children should all be thoroughly vaccinated. The examinations of throats, and for trachoma and other conditions are very important.

**Dr. Thompson**:—Had the good and bad fortune of having served on the school board some five years and knows that the board was in a constant dilemma to provide sufficient quarters for the schools. We could not keep up with the tenants at the schools. In the five years he was on the board they built a large addition to the Alamo School, the Lamar, the San Jacinto, Sunset and a big addition to the school on Montana street, and we started the Bell School and the Highland Park School. He believes that shows how rapidly the schools have developed. There are many problems connected with the housing of the children peculiar to El Paso. There may be some such problem in Douglas, San Antonio and other border towns, but here we have a large Mexican population. They are opposed to anything that will help on with the sanitary conditions. A great many of these children come from



places that are hovels compared with the schools. There are many children here every year having cases of scarlet fever, etc., who are never reported. Daily examination in the school ought to be in use. The lines along which the examiner can do the most good are those pertaining to the diagnosis of tuberculosis, diphtheria, and scarlet fever. Of all the horrible things scarlet fever is the worst. Among the Mexicans he has seen it sweep in and kill the children by scores. He believes the general public feels a little more kindly about school examinations than they did. He feels, however, that once in a while the examiners are not very wise. When it comes to employing a large nursing or medical force it is going to cost a good deal of money.

**Dr. Safford:**—Said he wished to remark on the hypodermic method of vaccination. He thinks that the old fashioned way that gives you a good scar is by far the best. Dr. Thompson spoke of the problems connected with contagious diseases in town, and it is clear that we have tremendous epidemics of scarlet, and it seems to him it is all out of proportion to other towns. He thinks it is because of the Mexican population who are living in unhygienic conditions, which foster disease.

**Dr. Waite:**—Remarked that certainly it was a foolish idea to send a child to school and ruin his health. If a little money on the child will make his health better you have made a financial investment to the community. He thinks it ought to be looked at from that viewpoint. Acute sore throats should be cured out of school. They are worse than diphtheria. He thinks this work should be carried much further. The drinking fountains do not work properly. It has been shown that not all the fountains are sanitary. Only the best ones should be used. The more overcrowding, the more we are exposing each child to infection.

**Dr. Werley:**—Called attention to syphilis as a disease which should be watched in the school children. In the last six years he has seen six cases among innocents in children of school age. These were extra genital but they had all the lesions of syphilis. He saw one family where the husband first had syphilis, then the wife, then a miscarriage, then a baby, and lastly a child of eight years.

**Dr. Cummings:**—Told of a colored man who was a sexual pervert and had been caught in his relations with school boys. This man was later found to be employed in one of the schools, though when this became known he was dismissed. When brought to court, they had to let him go because there was no law to punish him by.

**Lt. Col. Talbott:**—It seemed that the possibilities of syphilis in school children would be very great; they have to consider it thoroughly in their men. The bubbling fountain should be watched. With reference to crowding they found that in the winter the men crowded together in tents and after the oxygen had been reduced probably by the small heating stoves used, were a great deal more susceptible to disease; the ventilation here is very important also. If a man now has a very sore throat they isolate the contacts.

## THE TWO STAGE OPERATION FOR PROSTATECTOMY

BY

F. W. NOBLE, M. D., Div. Surgeon, El Paso & Southwestern Ry., Rock Island Ry.,  
and Tucumcari Hospital.

A little over seven years ago, I read a paper on supra-pubic prostatectomy, before the Central Medical Society at El Reno, Okla. This was at a time when the perineal operation was the favorite one with most American operators. This was especially true of the Oklahoma surgeons. I recall that some prominent members, of that society, strove hard to cast a wet blanket over my enthusiasm for the supra-pubic route; but as I had taken care of some of their bad results, following the perineal method, I remained unconvinced. The pendulum has now swung to the supra-pubic route and recently a distinct advance has been made in surgery of the prostate by doing the operation in two stages.

All who do bladder surgery know the deep concern with which we approach the majority of these cases, because the surgeon is called, in a great majority of cases, to relieve men of advanced years, who are already suffering from retention of urine and distended bladder, with the attendant evils of such conditions, which probably have existed acutely anywhere from one to three weeks. These men may have gotten rid of some urine, during that time, by leakage, or the catheter may have been used anywhere from one to three times a day. I had a case, in a man 73, who had had absolute retention for eleven days, and had the catheter passed but once daily, to relieve him. This had resulted in paraplegia of the lower extremities. There is no greater feeling of comfort comes to us, than the knowledge that we can operate on these almost hopeless cases now, with such great safety; for the two-stage operation has its first *indication* in patients suffering from cystitis, orchitis, pyelitis with daily chills and fever, loss of appetite, irregular pulse or marked depression; also when the bladder is enormously distended with urine and blood clots. Next: where the patient has a constitutional disease, such as: diabetes, nephritis, tuberculosis, cardiovascular diseases, high blood pressure, mitral and tricuspid insufficiency or stenosis, or is toxic from septic absorption or renal insufficiency or cannot stand the permanent catheter or, in cases of profound general depression, resulting from prolonged suffering, loss of sleep or general debility.

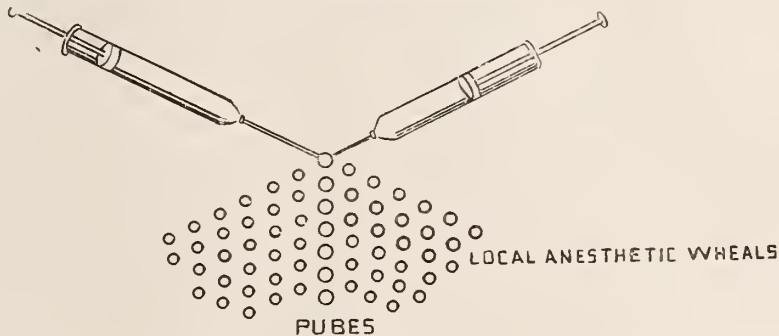
Supra-pubic prostatectomy is probably of American origin, dating back to its employment, by Belfield, at Chicago in 1886 and 1887. There was also published, at this time, a communication by McGill of Leeds. McGill removed obstructing portions of the gland and gradually extended the scope of the operation until he did a complete prostatectomy. Belfield, in addition to the removal of the gland by a supra-pubic route, also

used a perineal incision for drainage. Then we read of the work of Wiener, of Mt. Sinai Hospital, who reported a two-stage operation done in 1903, under nitrous oxide anaesthesia, in the journal of the American Medical Association of May 14th, 1904. A year later he reported his second case, in the *Annals of Surgery*; the second case being operated in 1904. After this we find Dr. Howard Lillienthal, advocating in the *Annals of Surgery* that prostatectomy could be done in two stages; also Dr. Follon Cabot, writing of the particular value of the two-stage operation as early as 1907, and he stated that he would in future use local anaesthesia for the first stage, because he was convinced that in some cases ether anaesthesia caused kidney or lung complications. Foreign surgeons seem to have been slow to take up the idea. Carrier, of Lille, advised it for infected cases in 1908 and, in that same year, Lanz of Amsterdam reported three badly infected cases, which he had operated upon under local anaesthesia. Next: Cholzoff, of Petrograd, in 1910 reported that his mortality had been so much reduced by the introduction of the two-stage method, that he had altogether abandoned doing the operation in one stage. He reported eleven single-stage operations with three deaths, and contrasted this mortality, with twenty consecutive two-stage operations with but one death. After this, Kummell of Hamburg, in 1911, deplored the fact that the two-stage operation had not found more favor in Germany, and reported four cases, in which he used local anaesthesia. In the Mayo clinics, in 1911, Judd reported that the Mayos had been able to reduce their mortality rate in prostatectomy materially by using a permanent catheter or a supra-pubic stab wound as the first stage. More recently the two-stage operation has been enthusiastically adopted by Dr. James Pederson of New York and his conclusions will be found in the transactions of the American Association of Genitourinary Surgeons in 1913. Then other equally enthusiastic writers have set down their experiences; namely: Paul Monroe Pilcher in 1915, Harry H. M. Malejan in 1915, Joseph Wiener in 1915, S. H. Harris in 1916, J. A. Gardner in 1917 and P. M. Pilcher again in 1917, and still more recently, Kolischer and Isenstaedt have aided greatly by improving the method of local anaesthesia.

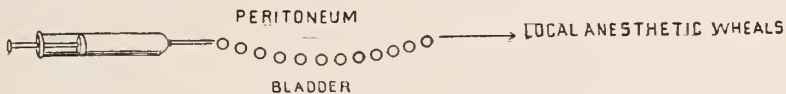
This method of anaesthesia is as follows, for the cystostomy: (In passing it may be said that it does not help the patient's feelings nor does it favorably impress onlookers when an inadequate anaesthesia of the abdominal wall is made. Two years ago I was present at an operation in one of the largest hospitals in this country, when the abdominal wall had been anaesthetized and had my feelings harrowed by the agonized screaming of the patient who was hand-cuffed to the table. One could imagine the feelings of an audience witnessing an operation done under such conditions. The anaesthesia in this case had been performed by making a linear wheal the extent of the intended incision and only extending it over the linea alba.) The line of the incision and adjacent por-



tions should be infiltrated in herring-bone fashion



so that the parts, close to the incision, will be so anaesthetized, as to be incapable of feeling the pain caused by the retractors. This same procedure is carried on, in the deeper tissues, beneath the skin, in the subcutaneous and subfascial tissues. Now a three to four inch incision is made, from the symphysis up, and all tissues above the peritoneum and bladder freely opened up; so that the operator can see and freely handle the bladder and the reduplication of the peritoneum. Now the line of peritoneal attachment to the bladder is infiltrated, thus:



For only by so doing can we painlessly strip the peritoneum up and back from the bladder, and this must be done carefully and freely, if we wish to open the bladder easily in an accessible part, and one which will later give us the best access to the prostate. Only when the peritoneum has been freely pushed back, from the upper part of the bladder, should we place two anchor stitches through the bladder wall to use as tractors. Now the bladder can be opened up by cutting upward between the stitches toward the peritoneum, being careful not to open this structure. The sides of the wound in the bladder can now be retracted by this mechanical retraction first brought out by ————— and modified by me, so that with interchangeable blades, it may be used as a retractor in opening the abdominal wall and in closing it, thus dispensing with one assistant. The bladder is cleansed and inspected for calculi, diverticula, tumors; and the condition of the walls and prostate noted. After this, a large rubber or glass drain is stitched into the bladder, being careful that it is not too long, thus causing pain to the patient by its pressure on the opposite wall of the bladder. This drain is then connected with a soft rubber tube which drains into a bottle attached to the bed, gauze and cotton dressings are put around the tube and the patient is ready to be returned to his bed. Our cystostomy, or the first stage, is completed.

The results of this cystostomy are: First, the quickness with which

we may let the patient be up, either sitting up in bed or up and around. If we deem best, we may get him out of bed in 24 hours. After the drainage is established, if the blood-pressure has been around 200 millimeters of mercury and the urinary output around 3000 C. C., with a low specified gravity, fair phthalein and no albumen or trace of albumen; then, because of the disturbance of balance between the heart, kidneys and secretion of urine and their nervous control in the patient, who has gradually become accustomed to the over-distension of the bladder then about the third day the patient feels sick and shows light uraemia, with diminished urinary output 500 to 750 C. C. less, phthalein contents drops 15% to 20% and albumen increases but the blood pressure lessens and there is often thirst, vomiting, hiccough and headache. These symptoms pass off in a few days, usually five to six. The urinary balance soon establishes itself and the patient begins to improve generally. There is more copious urinary secretion, the phthalein content increases, the albumen lessens and the blood pressure becomes still lower. We find that the two-stage operation reduces shock of the operation to a minimum as no ether is used there is neither acetonaemia from the anaesthetic, pneumonia nor nephritis. It relieves the kidneys of back pressure and helps to restore their functions and the absorption of toxic products ceases. It rests the bladder and allows it to recover its muscular tonicity. It improves the condition of infected bladders and kidney *pelves*. The patient soon begins to eat, drink and sleep better, and to improve in health generally. It lessens the hemorrhage which takes place when the prostate proper is removed.

After a period varying from a week to several months, in which the patient's health has been improved to our satisfaction, we may perform the second phase of the operation, namely: enucleate the prostate by any of the standard methods.

For this the anaesthetic used may be ether, nitrous oxide and oxygen or the most recent application of local anaesthesia, using the technique recently worked out by Kolischer and Eisenstaedt. If the local anaesthetic is to be used the patient is given a full dose of morphine, hypodermatically, about fifteen minutes before beginning the local anaesthetic. As soon as the patient becomes sleepy the abdomen is infiltrated as before. The next step is the flooding of the periprostatic plexus, which as a rule may be accomplished by injection through the perineum. A Leur syringe with a needle about 8 to 10 centimeters long is used. The left index finger being inserted into the rectum with the palmar surface facing the lateral pelvic wall. The skin is punctured laterally to the mid line half way between the anus and the root of the scrotum. The lateral direction of the needle from the medium plane is determined by the palpatory findings demonstrating the extent of the prostatic tumor, the aim being to bring the point of the needle in close proximity to the prostatic

plexis on either side of the prostate. At least 3 C. C. of half per cent novocaine and adrenalin is injected on either side. Now the bladder is opened and the success of the perineal flooding of the prostatic plexis is tested by exerting traction on the prostatic tumor by volsellum or a tumor screw. If this prostatic flooding has accomplished its purpose, then the pulling on the prostate or the stretching of the posterior urethra will cause no pain whatever. Complete anaesthesia is accompanied by blanching of the mucus membrane in covering the prostate.

Should our manipulation have caused any pain, this is proof that the periprostatic plexus has not been reached, and, therefore, the anaesthesia must be completed by flooding these nerve centers from within the bladder, this is done in the following way: The needle penetrates the bladder wall from within at a point located on a line drawn from the ureteral opening on either side to the internal meatus. The direction of the needle is forward, outward and somewhat downward, to insure again the blocking of the periprostatic nerve plexus.

#### BIBLIOGRAPHY

- Malejan, Harry H. M. (Trans. of the Clin. Soc. of the U. of M., 1915, Vol. VI.).  
Pedersen, James (Transaction of the Am. Assoc. of G. U. Surgeons, N. Y., 1913, Vol. VIII.).  
Pilcher, Paul Monroe (Year Book of the Pilcher Hosp., Brooklyn, N. Y., 1915).  
Wiener, Joseph (Annal of Surgery, Vol. 62, 1915).  
Harris, S. H. (Med. Journal of Australia, 1916).  
Kolischer & Eisenstaedt (Chicago Surg. Clinic, 1917).



## DAVIES-COLLEY FLAP OPERATION IN CLEFT PALETES.

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BYA. V. SMELKER, M. D., Nogales, Ariz.

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I want to deal chiefly with large clefts which are in children too old for attempted repair by the Brophy method.

A very limited experience inclines me to the belief that the Davies-Colley flap operation when employed with careful regard for certain surgical principles, will result in closure in most cases.

The principles to which I refer are:

- i. Lack of excessive tension.
- ii. Approximation of sufficient surface to prevent separation by subsequent retraction of tissue or cutting of suture.

This operation was first described by its author in the British Medical Journal of October, 1890. I have no change to offer in general method, but if success is to be attained, the above principles must be respected. I also believe that the use of a certain suture, which I will describe, works well for success. In order that one may respect these principles, two points in technic must be carefully observed.

- i. Make flaps the required width for the individual case.
- ii. Suture them with the least possible constriction and tension of tissue.

I do not maintain that these principles have not been recognized heretofore, but their neglect frequently spells failure.

After the incisions, which determine the flap widths, are once made, the work is done, for the rest of the operation is simple mechanics, and opportunity for exercise of surgical judgment is practically gone.

The originator of this operation advises that one incision be about one-fourth inch from the margin of the cleft, and the other incision about one-sixth inch from the opposite margin. This advice is good, and the resultant flaps will usually be ample, but I think that instead of stating the exact width of each flap, it is better to advise that the width of each flap should be determined by the operator in each individual case. By following the author's advice, one might encounter a cleft just too wide to be bridged by flaps of his dimension, whereas, the addition of, perhaps, one-sixth or one-quarter of an inch of tissue to either flap would suffice to completely bridge the aperture. This step is the most important of the operation, for when the incisions have once been made, the flaps must be approximated and the tension is a fixed factor.

In making estimates as to the amount of tissue necessary to close the cleft, sufficient should be selected to approximate the edges in this manner:



This may require a little more tissue than to unite the flaps in this manner :



But in order to apply certain sutures, to be described, the first mentioned method is necessary.

Now as to method of suture. I stated as a second principle, that the flaps must be sutured together with the least possible constriction and tension of tissue. This principle is old and thoroughly well recognized, but by applying the following suture, I believe that the maximum surface is opposed with the least possible construction and tension.

To the end of linen or silk sutures, small lead balls or beads are fixed by crushing or other method. Sutures thus arranged are applied in the following manner, beginning with either flap: the needle is passed through first the mucous surface, then approaching the second flap, the needle passes, first through the periosteal surface and emerges through the mucous surface. The requisite number of sutures are placed before any are secured. This is accomplished by threading over the free end of the suture another small lead bead, which is grasped in a small curved forceps, and as the bead is slipped to place and the suture pulled taut. the bead is crushed on the suture locking it. This is done from before backwards. Four sutures are usually sufficient to close the hard palate. You will notice, then, that these sutures do not appear in the mouth, but are on the nasal surface of the flap. The closure of the soft palate is perhaps more difficult by this method because of lack of tissue, but numerous plastic operations for closure of this deficiency are available.

This same sort of approximation of the flaps may be obtained by another method. This is satisfactory, but as the suture causes a greater constriction of tissue than by the leaded bead suture method, I do not consider it as valuable. It simply consists in tying the knots on the nasal side of the flap. After placing the suture so that the free ends emerge on the mucous surface of the flaps, the first knot is loosely made with the fingers, then each end of the suture is firmly grasped in a small curved forceps, and as the operator lifts toward the nasal cavity and ties, an assistant pushes gently on the point of junction of the flaps toward the nasal cavity. The second knot secures the tissue in a similar manner. This produces the desired approximation, but causes more constriction of tissue than the lead bead method. The advantages of the lead bead method of approximation are:

- i. A broader surface of contact is obtained.
- ii. Less tension on the tissue at each individual suture point results.
- iii. The roof of the mouth has no knots or other irritating objects present to attract the destructive tongue of the child.
- iv. Food particles cannot collect on this surface, which is soon covered by a smooth fibrinoplastic exudate.

There is but one disadvantage which this method of suture possesses, as against the method of the originator, which is that a little larger flap must be selected with a resulting larger surface to granulate. This, however, is not a valid objection, for it is unreasonable to suppose that the difference of one-sixth or one-quarter of an inch in the width of the granulating surface can materially interfere with the ultimate result.

In conclusion, I would confess that this method of suture may be old and well known, but I was unable to find mention of it in a careful search of the literature to which I had access. It is new to me, and I believe that with its careful application, fewer failures will result.

There are comparatively few surgeons who have the opportunity to repair many of these defects, and I believe that frequent failure is not due to lack of mechanical ability, but failure on the part of the surgeon to religiously follow well-known surgical principles hereinbefore mentioned.

In recalling failures coming under my personal observation, I believe most of them resulted from excessive tension and slough, or lack of proper apposition of the surfaces to be united.

Surgeons will tie sutures in cleft palate operations under a much more severe tension than they would attempt in any other operative field. Why? Simply because, after the incisions are once made, the operation must be concluded or abandoned. I firmly believe that when one errs in judgment and makes his flaps too small, he should not run the risk of slough and loss of this precious tissue, but preferably should abandon the case, wait for healing and then make larger flaps. Concerning rules which should govern the degree of tension to which these tissues can be placed, I believe they are practically the same as those of any other soft tissue field. The ischemia produced by the suture is at once noticeable, and, if this is extreme and extends too far beyond the center of the suture, great fear should be entertained.



# Southwestern Medicine

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Volume I

El Paso, Texas, December, 1917

No. 12

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All articles must be made exclusive to this journal. Reports of Society Meetings are asked for from the Secretaries.

Items of interest, with the name of the sender will be acceptable.

Books for review should be sent to The Editor, care of the Medical Library, 320 Roberts-Banner building, El Paso, Texas.

Advertisements of proprietary medicines must have had the preparations approved by the Council of Pharmacy, A. M. A.

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## EDITORIALS

There is to be no more "Salvarsan," but, as "Araphenamine" is the same thing, there need be no regretting an old and valuable remedy.

Moreover, war prices, under the patent issued to Paul Ehrlich and Alfred Bertheim, had risen to about \$35 a dose; whereas, the Commissioners speak of the new prices at \$1 for soldiers or sailors; \$1.25 for hospitals and \$1.50 for physicians. The initial price of Salvarsan was \$4. The three firms permitted to manufacture are: the Dermatological Research Laboratories of Philadelphia; the Takamine Laboratory of New York, and Farbuerke Hoechst Company, also of that city.

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It is announced that Dr. T. Brailsford Robertson, the discoverer of *Tethelin*, a preparation from the anterior lobe of the pituitary gland, has ceded all his rights to the University of California on whose staff he is a professor. There was an outcry a few months ago because Prof. Gordon Edwards, the inventor of the anaesthetic *Nikalgin*, had not disclosed the formulae. The basis is quinine hydrochloride, or more probably, quinine and urea hydrochloride with other anaesthetics. The secret will eventually be disclosed, but the great thing is that it has stood good under trial and is extensively used in the European hospitals.

Another name, now familiar, is *Flavine*, discovered by the Englishman, Dr. Browning, so potent yet so harmless an antiseptic that it can be used for the eye of a baby or the war wounds of a horse.

Meanwhile the Dakin-Carrel solution forges ahead, with variations from time to time with the users. "*Bipp*" (bismuth-iodoform-paraffin-paste), is still popular for the dressing of wounds, and every month sees some new attack on the old enemy Sepsis, even to a serious discussion concerning the therapeutics of gunpowder.

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### NOTICE

Nov. 11, 1917.

It is of the utmost importance that the medical profession throughout the country be kept informed in regard to the activities of the Surgeon General's Office, the Medical Section of the National Council of Defense in Washington, and the work of the State Committees.

There should be no difficulty in getting this information by writing directly for it.

Since September, 1917, the situation of the Medical Reserve Corps in regard to numbers has become less acute. About 14,000 are commissioned and 7,000 are in the process of being commissioned.

21,000 medical officers are about sufficient for an army of 2,000,000 men.

The indications are that we will need a much larger army, and the medical profession of this country will be tested to its utmost capacity.

At a recent meeting in Chicago of the State Committees of the National Council of Defense it was decided to petition Congress to create a Reserve Medical Officers Reserve Corps. When this is created, every qualified physician at any age will be given the opportunity and honor to volunteer his services and be enrolled. After this every physician will be in a position either to wear the insignia of honor of the Reserve Medical Officers Reserve Corps, or the uniform of active service in the Medical Officers Reserve Corps.

From the new Reserve Medical Officers Reserve Corps the Surgeon General will be able to select medical officers as they are required for service in France or at home.

The present great problems are:—The training of physicians in civil practice for military duty.

The protection of the army in training in this country from venereal infection.

The future great problem when our wounded begin to return to this country, will be the reconstruction and re-education of the crippled soldiers.

The great and only necessity of the present is the successful carrying on of this war.

JOSEPH COLT BLOODGOOD,  
Chairman of Committee on Preparedness  
Southern Medical Association.

## ARIZONA NEWS ITEMS

Capt. Wm. H. Sargent, of Phoenix, who took training at the Los Angeles School of Roentgenology, was ordered to New York and his family have received advices that he sailed for France during November.

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Lieut. E. F. Malone, formerly Assistant at the State Hospital, is taking training at the Los Angeles School of Roentgenology.

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Capt. C. T. Sturgeon, of Globe, has been ordered to New York City for special training in orthopedic surgery.

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Among the list of states furnishing their patriotic quota of physicians, we should take particular pride that Arizona stands first in percentage, having vounteered more than 16 per cent of her medical men. At the present time the number of men leaving the state is far in excess of those coming in, so that this percentage will rise.

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Dr. S. D. Whiting, of the Indian School Sanatorium, Phoenix, has tendered his resignation in order that he may volunteer his services in the Medical Reserve Corps. Dr. Whiting's resignation was accepted with reluctance by the Commissioner of Indian Affairs. Dr. Whiting hopes to engage in examination of applicants for tuberculosis after his application to the Corps has been accepted.

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Dr. R. J. Stroud, of Gleeson, recently suffered an attack of acute nephritis, induced by exposure and chilling on one of his long professional trips.

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The Medical Defense Committee of the Arizona State Association are, at present, handling three suits against members of the Association. One against Dr. Bim Smith, of Douglas, Ariz., for a burn suffered when the patient's mother, on her own initiative, placed a hot water bottle to the feet of the patient, who was unconscious from an anesthetic; the second against Dr. John W. Flinn, of Prescott, who is charged with using a "dangerous and experimental form of treatment," when he practiced heliotherapy on a discharging sinus; the third case against Dr. J. E. Crawford, of Ray, who is being sued for allowing salvarsan to escape into the tissues around the vein.

The operation of the Medical Defense system will be watched with interest in these cases.



## BOOK REVIEWS

**History of Medicine. Suggestions for study and Bibliographic Data.** By Fielding H. Garrison, A. B., M. D., Principal Assistant Librarian, Surgeon General's Office, Washington, D. C. Second edition revised and enlarged. Octavo of 905 pages with many portraits. W. B. Saunders Company, Philadelphia and London, 1917. Cloth, \$6.50 net; Half Morocco, \$8.00 net.

To the eyes of the world, Dr. Garrison's first edition seemed perfectly and beautifully dressed, but, like a mother who gives lingering touches and makes changes in the robe of a festive-going daughter, so he has brought from his treasury still more valuable facts for this, his literary child.

There is a saying in Baltimore that if Dr. Welch were asked for historical data in his sleep, he would still answer correctly, and this correctness forms the great charm in Dr. Garrison also. The sorrowful student or the brazen-faced pot-boiler will not afterwards find him contradicted by a "higher authority," for the author has been there first, and, moreover, does not deluge us with ill assorted, cardiac-indexed facts or write in high falutin' style to show how much he knows, but woos us by his lucidity to follow him in the pleasant path he has made through the obscurities of medical history.

The new edition lands us on the battlefield where Dakin and Carrel, Cushing, Mayo, are doing such splendid work, yet, not less useful than the blood stained man is the inky one slaying Ignorance for the benefit of medical heroes when the trench shall be exchanged for the easy chair.

—D. W.

## THE CONVERSION OF HAMILTON WHEELER

**A Novelette of Religion and Love, Introducing Studies in Religious Psychology and Pathology.** By Prescott Locke. The Pandect Publishing Co., Bloomington, Illinois, 1917. Price \$1.25.

According to the author, the evangelist is a man who "is doing more harm than all the saloons of the country put together." "In fact, evangelists make business for the saloon and the brothel, as well as directly provide thousands of inmates for our penal and insane institutions."

"A 'conversion' is an introduction into—not the supernatural, but the subnormal. . . ." Whenever I meet a person who avers positively a fixed conviction that Jesus is his Saviour, asserts the reality of a living Christ or God, or that Jesus is a genuine historical character, I have no hesitancy in pronouncing such a pseudo-perception as a full-fledged delusion. . . . The term 'finding Jesus,' must be regarded in all cases as one form or another of delusion, illusion or hallucination."

Reading further, the author's ideal is learnt: Religion should be purged of its supernatural element. There should be schools of individual and international sociology, ethics, morals, hygienic living, sanitation, civil government. . . . The clergy should be absorbed in the new religion of humanity. The Christian religion, with its unwholesome features and pathological influences and achievements should not be permitted to masquerade as an institution of ethical culture in our otherwise highly civilized age.

The author draws a melancholy picture of conversion, and yet, a few more of such men as Augustine, Clovis, Bunyan, Wesley, Livingstone, Paton, Gordon, Moody, would not come amiss in "our highly civilized age."

Like Mr. Gradgrind, we ask for facts. The author admits he has only "news-paper reports" of increasing insanity resulting from revivals. Where are his proofs that "the evangelist is doing more harm than all the saloons put together."

Also, he cannot differentiate between an "illusion" and a "delusion," nor define "ethical."

Also, if the converted are, practically, insane, then the real Christians must be defined as "borderline" cases, as they are still obsessed by a belief in Christ and immortality.

Though there is much that is true in the book concerning ill-trained emotionalism, the author does not make it quite clear to what his boy hero was converted; that is, whether the term is to be applied to his turning into a lustful neurotic as the result of hearing the evangelist, or afterwards into a physically healthy, broad-minded, atheist as the result of a vigorous course of psychotherapy, cold baths, brisk rubdowns, gymnastics and "religion of humanity," under the family doctor.

—D. W.

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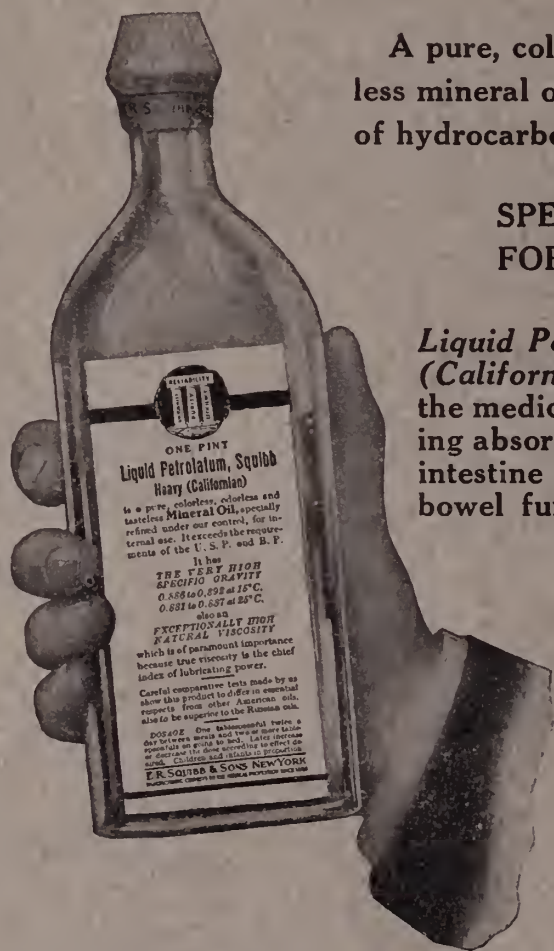
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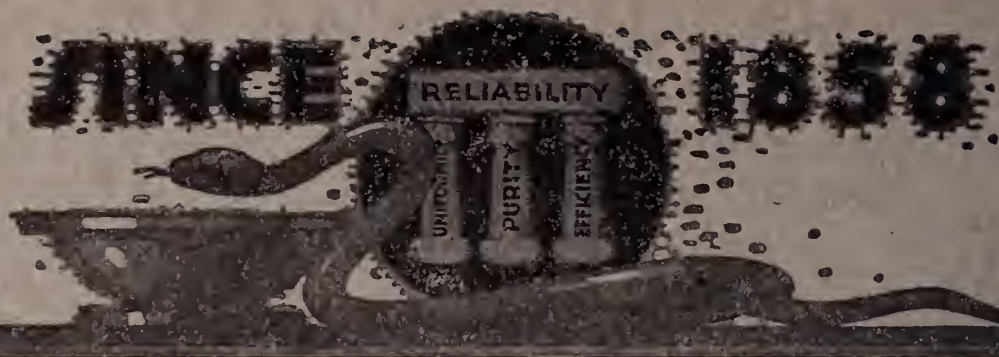
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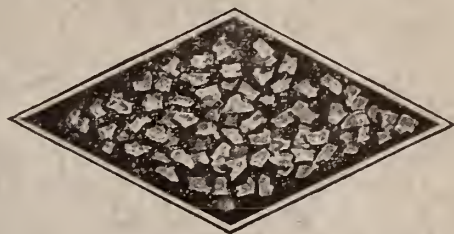
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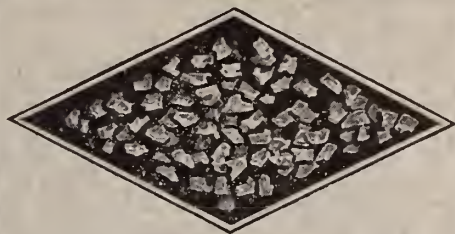
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Figure 1



